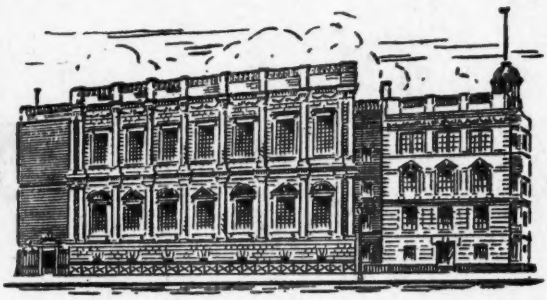
Vol. LXXVIII. AUGUST, 1933 No. 511

JOURNAL



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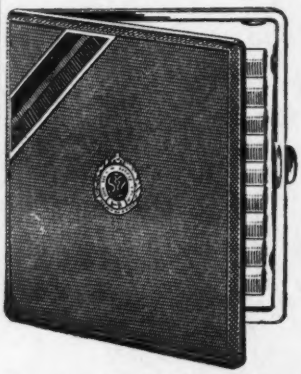

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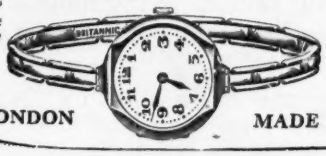

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SECRETARY'S NOTES

August, 1933.

Visit of His Royal Highness the Duke of Connaught

His Royal Highness the Duke of Connaught, as President, visited the Institution on the afternoon of 13th July to open the Special Exhibition of pictures selected from the Crookshank Collection of Military Prints, held in the Theatre.

The opportunity was taken by His Royal Highness to present Chesney Medals to Commander C. N. Robinson, R.N., and Colonel C. de W. Crookshank, M.P. He was received by Field-Marshal the Viscount Allenby, G.C.B., G.C.M.G., D.C.L., LL.D., in the unavoidable absence of the Chairman, and Captain E. Altham, C.B., R.N., Chief Executive Officer of the Council and Secretary. By request of His Royal Highness his visit was private, but a number of the Members of the Council and relatives and personal friends of the recipients of the Chesney Medals were present.

Council

Lieutenant-General Sir J. F. S. D. Coleridge, K.C.B., C.M.G., D.S.O., has succeeded Field-Marshal Sir Claud Jacob, G.C.B., G.C.S.I., K.C.M.G., as Indian Army representative, on the latter being elected a Vice-President, as announced in the May JOURNAL.

Air Chief Marshal Sir E. L. Ellington, K.C.B., C.M.G., C.B.E., A.D.C., has become an *ex-officio* Member of the Council on taking up the appointment of Chief of the Air Staff.

Air Vice-Marshal Sir E. R. Ludlow Hewitt, K.C.B., C.M.G., D.S.O., M.C., has succeeded Air Chief Marshal Sir E. L. Ellington as the official representative of the Air Ministry on the Council.

New Members

The following officers joined the Institution during the months of May, June and July:—

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Lieutenant W. A. M. Batten, R.N.
Lieutenant-Commander J. Hext Lewes, R.N.
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Captain F. R. Barry, R.N.
Rear-Admiral C. W. Bruton, C.M.G.
Paymaster-Lieutenant W. R. Tinniswood, R.N.

ARMY.

Captain E. B. Smyth, The Essex Regiment.
Major G. G. H. Reade, late 3rd Gloucestershire Regiment.
2nd Lieutenant R. M. Harris, The Norfolk Regiment (S.R.O.).
Lieutenant G. E. Cave, R.A.
Lieutenant J. H. Dixon, late Royal Scots.
Captain H. R. K. Gibbs, 6th Gurkha Rifles.
2nd Lieutenant J. MacDougall, The Duke of Cornwall's Light Infantry.
2nd Lieutenant K. E. A. Molyneux, The Dorsetshire Regiment.
Lieutenant G. P. D. Blacker, R.A.
Lieutenant F. W. Sandars, The Durham Light Infantry.
Captain W. B. Radford, King's Dragoon Guards.
Professor A. Leyland Robinson, late R.A.M.C.
Lieutenant P. G. J. M. D. Bulfin, The Green Howards.
2nd Lieutenant J. C. Winchester, R.E.
Captain G. E. Bowden, M.C., The Loyal Regiment.
Lieutenant A. N. Barnard, The Royal Irish Fusiliers.
Major L. Blake, M.C., I.M.S.
Captain D. Swinburne, The Royal Ulster Rifles.
Lieutenant G. C. Stockwell, The Seaforth Highlanders.
Colonel E. E. F. Baker, D.S.O., M.C., 7th City of London Regiment.
Captain J. N. Bendyshe, late The Worcestershire Regiment.
Captain L. R. Lumley, M.P., The Yorkshire Dragoons, T.A.
Lieutenant J. Scott-Elliot, The King's Own Scottish Borderers.
Captain O. K. Steveni, 2/9th Gurkha Rifles.
Brevet Lieutenant-Colonel J. A. Churchill, M.C., The Durham Light Infantry.
Captain A. R. Spurgin, 3rd Battn. 1st Punjab Regiment.
Captain B. H. Ashmore, The Royal Scots.
Lieutenant G. L. Baker, The Gloucestershire Regiment.
2nd Lieutenant R. J. O'Lone, I.A.
Captain W. M. F. Gamble, 3/8th Punjab Regiment.
Lieutenant R. S. Cresswell, The South Wales Borderers.
Captain G. M. Pirie, R.E.
2nd Lieutenant Mian Hayaud Din, 4/12th Frontier Force Regiment.

Special Facilities for Junior Officers

The attention of Members is invited to the special facilities which now exist for Junior Officers to join the Institution :—

Commissioned Officers of the Home, Dominion, Indian and Colonial fighting Services and their Reserves, of three years or less seniority as such ; Midshipmen, R.N., R.N.R. and R.N.V.R. ; and Naval, Military, and Air Force Cadets, are admitted to Membership without Entrance Fee on payment of the first annual subscription of £1 5s.

Gold Medal Essay, 1933

The following essay has been received :—

" Form, Form, Riflemen, form !
Ready, be ready to meet the storm."

JOURNAL

Military Contributions—Commanding Officer's Approval

Serving officers in the Army must forward the written approval of their Commanding Officer with any articles or letters sent to the Editor for publication in the JOURNAL, as this is now required by the War Office when such contributions are sent there for Official sanction.

LIBRARY

Rules Governing Return of Books

The attention of Members is invited to the following Regulations governing the retention and return of books :—

(1) Certain books, for which there is a special demand, must not be retained longer than a fortnight after the date of receipt. A notice to this effect will be found in the book.

(2) In the United Kingdom.—Books must normally be returned within one month of the date of issue ; but the Librarian is authorised to make extensions of one month at a time on application by a Member, up to a maximum of three months from the date of issue, if the work is not required by another Member.

(3) Stations Abroad.—When books are sent to Members abroad the same rules apply as for the United Kingdom, except that " the date of receipt " is substituted for " the date of issue."

N.B.—IN VIEW OF THE INCREASING DEMAND FOR BOOKS FROM THE LENDING LIBRARY, IT IS ESSENTIAL IN THEIR OWN INTERESTS THAT MEMBERS SHOULD ADHERE STRICTLY TO THE RULES GOVERNING THE RETURN OF BOOKS. FAILURE TO DO SO IS CAUSING MUCH INCONVENIENCE, AND INVOLVING THE INSTITUTION IN UNNECESSARY EXPENSE AND CLERICAL LABOUR.

MUSEUM

Gift of Her Majesty The Queen

Her Majesty the Queen has presented to the Museum a small framed ivory medallion of the Duke of Wellington.

Exhibition of Military Prints

The Exhibition of Military Prints selected from the Crookshank Collection is being shown in the Theatre until the latter part of September. Members should bring their friends to the Institution door and sign the book when visiting it, or they can be supplied with free tickets on application to the Secretary. Visitors to the Museum are admitted without extra charge.

A Catalogue of the Exhibition is available, price 3d.

Special Exhibition

The Special Exhibition of dioramas illustrating Empire Voyages and Discoveries is being retained until the autumn. It has proved particularly attractive to children.

Collection of Medals

The Institution already possesses a large and varied collection of medals, but offers of additions to the collection will be most welcome. Details of such offers should, however, be communicated to the Curator before medals are sent.

Regimental Badges and Buttons

The Institution's collection of Regimental Badges and Buttons has been reorganized and re-arranged. It is desired to complete the collection, and contributions from Members for this purpose would be very much appreciated.

Additions

Permanent.

(8603) Full-dress uniform of the 3rd Foot Guards, 1820–30.—Purchased.

(8604) Officer's full-dress coatee of the 1st Foot Guards, 1820–30.

(8605) 21-inch torpedo.—Presented by the Lords Commissioners of the Admiralty.

(8606) Officer's full-dress coatee of the 69th Bengal Native Infantry and mess jacket, 1837.—Presented by Miss Ranken.

(8607) Full-dress coatee (1845 and 1854) and cocked hat of Colonel C. S. Teale, Staff Officer for Pensioners. Military cloak of the 4th King's Own Regiment of Foot, 1837.—Presented by Mrs. Courtenay Lord and Miss Teale.

(8608) Queen's South African Medal with three bars; King's South African Medal with two bars. Awarded to Private Godfrey, Manchester Regiment.—Presented by S. E. Sherwood.

(8609) Officer's coatee, 16th Bengal Native Infantry, 1840.—Presented by the Marquess of Cambridge.

(8610) Drum-Major's sash, cap badge, collar badges and shoulder-titles of the Hazara Pioneers.—Presented by the Officers of the Hazara Pioneers on the disbandment of the Regiment.

(8611) Water-colour painting of an officer of the 3rd Foot Guards, 1822–28.—Painted and presented by Lieut.-Colonel R. J. Macdonald.

(8612) Royal Flying Corps banner carried at the commemoration service for the first seven divisions, held in the Albert Hall on 15th December, 1917.—Presented by Miss Symonds.

(8613) United States Springfield Rifle, 1884.—Presented by Lieut.-Colonel C. H. W. Owen.

(8614) Framed photograph of G.H.Q. Staff, Pretoria, 1902.—Presented by Lady Alderson.

(8615) German Service pistol, 1870 pattern.—Presented by the Rev. W. M. Lummis.

(8616) Warrant officer's and private's uniform of the 11th Hussars.—Presented by the Rev. W. M. Lummis.

(8617) Cap of one of the crew of the "Gneisenau," sunk at the battle of the Falkland Islands.—Presented by Commander R. M. Dick, R.N.

(8618) Set of cap badges of the Volunteer Units of the Federated Malay States.—Presented by Captain H. A. A. Howell.

(8619) Four prints illustrating the action between the "Shannon" and the "Chesapeake."—Presented by N. C. King.

(8620) Model of an Armstrong-Whitworth "Atlas II" Army Co-operation biplane.—Presented by Sir W. G. Armstrong-Whitworth Aviation, Ltd.

(8621) Crimean medal with four bars; Turkish Crimean medal. Awarded to Gunner M. Sharpe, R.H.A.—Presented by Miss Sharpe.

(8622) Slouch hat badge worn by the Transvaal Boer Commandos.—Presented by G. Sheppard.

(8623) Scottish basket-hilted broad sword or claymore, XVIIth century. Blade by Andrea Ferara. Last used by Duncan Forbes at Culloden, 1746.—Bequeathed by Lieut.-Colonel S. Willcocks.

(8624) Relief portrait in ivory of the Duke of Wellington.—Presented by Her Majesty Queen Mary.

Attendance

The amount taken for admission during the last quarter was:—

£85 7s. 6d. in May.
£110 5s. 0d. in June.
£116 16s. 0d. in July.

Purchase Fund

This Fund has been opened to assist in the purchase of new exhibits. The Council hope that it will receive the support of Members interested in the Museum.

CHESNEY GOLD MEDAL

The Council has awarded the following Chesney Gold Medals:—

1931.—Commander C. N. Robinson, R.N., for his work as Editor of *Brassey's Naval and Shipping Annual* during the past five years, and for his long and valuable association with naval literature and art.

1932.—Colonel C. de W. Crookshank, M.P., for his *Prints of British Military Operations*, 1066–1868, and his valuable services in the cause of military art.

PREVIOUS RECIPIENTS.

(*With rank of officers at the time of the award*).

1900. Captain A. T. Mahan, United States Navy.
1907. Major-General Sir J. F. Maurice, K.C.B., *p.s.c.*
1909. Hon. J. W. Fortescue, M.V.O.
1910. Sir J. K. Laughton, Kt., M.A.
1911. Professor C. W. C. Oman, M.A., F.S.A.
1913. Colonel Sir L. A. Hale.
1914. Sir Julian S. Corbett, LL.M., F.S.A.
1919. Major-General E. D. Swinton, C.B., D.S.O.
1921. Major-General Sir C. E. Callwell, K.C.B.
1924. Professor G. A. R. Callender, M.A., F.S.A.
1925. Captain Sir George Arthur, Bt., M.V.O.
1926. Vice-Admiral Sir H. W. Richmond, K.C.B.
1927. Brigadier-General Sir J. E. Edmonds, C.B., C.M.G.
1928. L. G. Carr-Laughton.
1929. Colonel H. C. Wylly, C.B.
1930. Dr. C. E. W. Bean.

THE BATTLE OF SPURS. 1513 A.D.

Reproduced from "The Chronicles of Enguerrand de Monstrelet" 1819.

One of the volumes in the Crookshank Collection

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THE VALUE OF AIRCRAFT FOR PROTECTING SEA-BORNE TRADE

By Air Commodore E. D. M. Robertson, D.F.C., R.A.F.

On Wednesday, 22nd March, 1933.

Rear-Admiral C. J. C. Little, C.B., in the Chair.

The Chairman in introducing the Lecturer said that he was one of the pioneers of that body of officers who were perhaps too rare to-day, namely, those who combine a sea sense with an air sense, as he had been brought up in the Navy and then joined the Royal Air Force. He was, therefore, well armed to deal with this difficult subject.

LECTURE.

THE defence of trade at sea is predominantly a naval question, and it is not suggested that the older forms of protection are obsolete or that they can be replaced. But the advent of aircraft has introduced a new factor, and the need for co-operation of air forces in narrow waters is well recognised. The object of this lecture, therefore, is to put forward some considerations which appear important from the air point of view. At the same time it is proposed to keep the discussion on general lines and not to deal with aspects relating to any particular nation or nations.

GENERAL CONSIDERATIONS

Before attempting to assess values, mention must be made of three things which will have a general bearing on the subject—namely, weather, anti-aircraft fire, and law.

Reproduced from "The Chronicles of Enguerrand de Monstrelet" 1819.
One of the volumes in the Crookshank Collection

Weather.—Weather may affect the movement of any humanly-controlled machine of locomotion from a battleship downwards. In the situations envisaged later, aircraft will, at times, be hampered by the weather, and so will shipping. Sometimes the weather will hinder one more than the other, and at other times it will hinder both. Beyond noting one or two general points, no attempt will be made to assess its effect, but it must be recognized as a factor in all operations.

The following characteristics should, however, be noted. Both clouds and the sun are a great help to aircraft in effecting surprise. Wind will rarely interfere with the operation of landplanes, but may affect flying boats and seaplanes. Fog hampers all operations, but aerodromes can sometimes be placed where the liability to fogs is not great.

Anti-aircraft fire.—The effect of anti-aircraft fire is another indeterminable quantity. In some circumstances it may prove a serious deterrent and in others it may prove quite ineffective. In a future war there will be many shades between these extremes. Air forces do not claim to be immune from gun fire, and it is recognized that they will, on occasion, suffer losses, and at times heavy losses. Machine guns, which are simple to operate, may be a deterrent to low flying aircraft, but they are no real protection against deliberate bombing or torpedo attack.

Law.—As is well known, the Hague Committee of Jurists met in 1922-3 to consider certain questions of international law, amongst which were the relations of aircraft to shipping in war. There were fears that aircraft might abuse rights if they were allowed to order shipping into port for examination. But no agreement was reached, and at present there are no rules governing the employment of aircraft in war. The difficulties of visit and search by aircraft operating from the sea are obvious. There are also difficulties in identification of merchant vessels which may use neutral flags. At present it seems probable that, at the outbreak of war, international laws will be observed in the early days at any rate. Ships convoyed by their own warships are legitimate targets, but individual ships may be sunk only if their crews are placed in safety. However, military necessity has broken many laws in the past and may do so again, while, although it is not the intention to impute bad faith to any nation, recent experience has shown the need for providing for this contingency in any scheme of defence.

On the subject of the attack and defence of trade, the late Sir Julian Corbett wrote :—

> "Modern developments and changes in shipping and naval material have indeed so profoundly modified the whole conditions of commerce protection that there is no part of strategy where

historical deduction is more liable to error. To avoid error as far as is possible, it is essential to keep those developments in mind at every step. The more important of them are three in number. Firstly, the abolition of privateering; secondly, the reduced range of action of all warships; and, thirdly, the development of wireless telegraphy."

Had Sir Julian written his " Principles of Maritime Strategy " later, he might have added, fourthly, submarines, and, fifthly, aircraft.

RECENT DEVELOPMENTS

In approaching the problem of the value of aircraft for the defence of sea-borne trade, it will be as well to glance at some recent developments and their effects. The outbreak of the War found aircraft still in their infancy, and the stressed times between 1914 and 1918, although they gave a great impetus to air development, were not best suited to a considered advance in which science and technical development each played their proper parts. The last fourteen years have enabled this problem to be considered at leisure, with the result that aircraft and their operation in 1933 differ, it would hardly be exaggerating to say radically, from the standard reached in 1918. The following are some of the directions in which advances have been made:—

Speed has increased materially. Increased speed improves the accuracy of navigation, reduces the time taken to search a given area, and so reduces the chances of evasion by surface forces. The night hours as an aid to evasion are virtually reduced. The difficulties of defence both by air and by gunfire are increased; the former through surprise, and the latter through the shorter time that an aeroplane is under fire and also through the increased target travel during the time of flight of the projectile. Against this, however, must be set the improvements in anti-aircraft equipment.

Reliability of material has improved, thus reducing the ground personnel necessary for maintenance and giving greater confidence to the flying personnel.

Great advances have been made in accessories, such as flying instruments, wireless, bomb sights, bombs and torpedoes. The automatic pilot for large aircraft aids both navigation and the endurance of personnel. The silencing of aircraft has made progress, thus helping the element of surprise.

The mental and physical requirements of personnel, both ground and flying, are now well understood, so that the chances of getting round pegs into square holes are much diminished. The establishments necessary for various types of squadrons are well known, with a consequent economy

of man power. Considerable advances have been made in training, so that raw personnel can be trained to the required standard much more certainly and easily than in the War, and unsuitable candidates rejected at an early stage. The requirements for an expansion of a training programme are well known.

Blind flying, i.e., flying in conditions equivalent to those in fog or cloud, is taught regularly.

Developments in the use of weapons, e.g., bombs and torpedoes, have advanced much. There is no comparison between the standards of accuracy of bombing in 1918 and 1933.

Air navigation over the sea was little known at the outbreak of war, but developments have been considerable, and much attention has been given to the various problems involved. Direction-finding wireless is now available. The reliability of the civil air services should be noted. The way in which time-tables are maintained in all conditions of weather will have its counterpart in future hostilities, where the effect of weather will become a diminishing factor.

In recent years, the uses of aircraft in war have received much study, so that, in a future war, better use will be made of the available forces. To quote only one conclusion and its effect; there is not likely to be the same large number of aircraft employed in passive defence in a future war as was employed in the late war.

As regards the attack or protection of trade, an important advance is the development of deck-landing, which will enable aircraft, if required, to operate from ships on the trade routes. Catapults may also have some effect.

The development of flying since 1918 may be looked at from another viewpoint. Aviation is becoming part of the every day life of many people, as the growth of flying clubs shows. The clubs provide potential training grounds and the light aeroplane is suitable for reconnaissance work near the coasts. It might even be fitted to carry a few light bombs. If the really popular aeroplane comes, it may be possible to patrol coastal areas at a cost nearly comparable to that of running a car for a similar distance. As flying attracts more attention, so is more money spent on developments and improvements, which in their turn, by giving better service, give more incentive to further improvement. Money can probably now be found to develop any promising invention in connection with the air. Air progress is advancing in a slow geometric curve likely to accelerate, and it must be remembered that, apart from progress along standard lines, the time is not past when some invention or discovery may cause a far-reaching revolution in aircraft design.

Whatever may be their effect on, or value for, trade protection now, the influence of aircraft will increase and it would be rash to try and assess their ultimate value. Equally, when a war starts the resources released for air development must be large and new, and improved types of aircraft will soon be available. Therefore it would be misleading to judge the potentialities of enemy aircraft, other than for the early few months of a war, by the types and performances of those with which the war starts.

The aeroplane or flying boat is a compromise between several conflicting requirements, but if one particular quality, e.g., endurance, is required at the expense of others, it is possible to construct aircraft to that requirement. In the late war, the types used by ourselves and the enemy often differed widely. For instance, the Germans did not require flying boats for escort work nor for extensive anti-submarine patrols, but, on the other hand, they produced good fighter seaplanes in 1918 to which we had no counterpart.

As regards flying boat development, although their seaworthiness has improved, they are not yet able to take off except in comparatively calm weather. It may be possible to refuel them at sea, but the occasions when this can be done will be so limited and weather will be such a determining factor that any plan based on this supposition will, generally, prove unreliable.

The question of numbers deserves to be mentioned. In peace time, exercises and manœuvres are carried out with the comparatively few aircraft available in the standing forces. The science of mass production was well learnt in the late war, and since then it has been applied to numerous machines, the most noticeable being motor cars. In a future war, mass production of aircraft may be expected to start at once and, unless the factories are destroyed, belligerents will soon find themselves in possession of large air fleets. It is necessary, therefore, not to draw false conclusions from the small numbers employed in peace time.

It is also dangerous to draw too exact conclusions from the experiences of the late war. The greatest care is necessary to give due weight to development and to remember that air played its part without the advantage of previous study by staff colleges.

AIRCRAFT AND SEA-BORNE TRADE

Trade may require direct protection at sea or in harbour. At sea it may be threatened on the high seas, in focal areas, or near terminal points. The attacking forces may consist of enemy warships, surface or submarine raiders, minelayers, or aircraft. Perhaps the simplest way to assess the value of aircraft in the tactical situations enumerated above will be,

firstly, to consider them as a means to counter the potential forms of attack. Subsequently, their more particular role in each of the above situations can receive brief consideration. But, as a preliminary, mention must be made of reconnaissance work.

Reconnaissance.

The use of aircraft for reconnaissance is well recognized in peace operations. Their speed and powers of evasion make them of special value. They can sometimes give valuable negative information, viz., that a particular area is clear of an enemy, or that a surface attack cannot take place within a certain time. Coastal patrol work can probably be carried out very cheaply by light aircraft.

Aircraft cannot, of course, remain day and night on their beat, and they cannot, therefore, replace *in toto* surface reconnaissance. There will be occasions when a reduction in surface reconnaissance forces will be possible, and, perhaps, in certain circumstances, it may even be dispensed with. The value of aircraft in searching for raiders should be high. On the other hand, there is always the difficulty of identifying a vessel against a sea background from the air, instead of the sky background afforded from near the sea level.

Forms of Attack.

Surface Warships.—Owing to the lack of recent war experience, the value of aircraft must be largely a matter of speculation. Exercises with torpedo aircraft against battleships are carried out as part of a fleet's training, and doubtless they provide valuable lessons in tactics both for the ships and the aircraft, but no one can assess their real value. Practical experience alone will give the true answer. That aircraft are regarded as a serious threat may be presumed from the amount of money that is spent on equipping fleets with torpedo bombers. It is reasonable to assume that a naval commander would not normally put his fleet within striking range of aircraft without compensatory advantages. It is also a fair assumption that, unless a nation is morally beaten, there would be no difficulty in getting as many pilots as are required to press home torpedo or bomb attacks.

In so far as they may disable enemy war vessels or circumscribe their movements, aircraft or the threat of aircraft may, therefore, be said to assist materially in the defence of trade.

Submarines.—Aircraft were much used in the late war for submarine patrolling. Patrols may be divided broadly into three classes :—

(1) Protective patrols, i.e., escorting patrols to protect a particular convoy or unit from attack in its passage. The escorting aircraft remain always in proximity to the unit to be escorted.

(2) Search patrols to look for a particular submarine known or believed to be in a given locality or on a given passage.
(3) Casual patrols over areas or routes where submarines may be working.

Recent developments should make aircraft more efficient or, alternatively, give the same protection or a smaller outlay of man-power and money. Increased speed should enable an attack to be made in a shorter interval after sighting the enemy, and will also enable aircraft to escort for a greater distance owing to the reduced "idle" time in getting to and from the patrol area. Bombs and their fuzes are also more efficient. Against these developments, however, it must be remembered that submarine design has also advanced. Amongst other improvements, it is probable that underwater craft in a future war will be found to have stronger hulls to resist explosions, and that they will be able to dive more quickly and deeper.

Raiders.—The exploits of such vessels as the "Moewe" and "Wolf,' after the destruction of the German raiding cruisers, are too well known to need recapitulation. The inconspicuous appearance of these converted merchant vessels, combined with their large carrying capacity for coal and stores, enabled them to keep the seas for periods which might not unfairly be compared with those of the old sailing-ship days before the fuel question had arisen.

Bearing in mind the changes which Sir Julian Corbett has pointed out, it is as well to consider the possibilities of a future raider. With the experience gained by merchantmen in the late war, a future "Emden" is unlikely to meet with such a sensational success, even if aircraft are not available to help curtail the search. On the other hand, the causes and conditions leading to war are now much better understood and hostilities will, probably, be prepared for more readily and more swiftly if war threatens. If a nation has a vital sea-borne trade, a potential belligerent may well have considered the means of striking a surprise blow at it, and may have made pre-war preparations to give effect to such plans when hostilities break out. The use of aircraft would probably be included in such plans.

The scantlings of fast liners are fairly light and superstructures are easily cut away. It would not be a long or difficult task to convert a number of these vessels to aircraft carriers, especially if the material for the lifts were prepared and laid aside in the precautionary period. A few light guns could easily be included in the equipment. Such converted liners might be used until regular carriers could be built; alternatively, the attack on trade by this means might be delayed until the special vessels were constructed. Law and ethics apart, there are

some disadvantages in such vessels which should be considered before enumerating their advantages and possible uses.

(1) They possess an unusual appearance which will attract attention—this must be accepted.

(2) High cost with their air equipment—this is not of vital importance when a major war is to be won or lost.

(3) Their sea-keeping endurance may be reduced owing to the space taken by the aircraft—this space would otherwise be available for fuel or stores.

(4) In certain weather conditions their aircraft will be merely a useless cargo.

(5) They are very vulnerable.

Against these disadvantages there are, however, several clear advantages which may outweigh the former.

A raider of this type has, through her aircraft, her radius of reconnaissance and striking power increased up to the distance at which the aircraft can work. At present, a hundred miles is, perhaps, a reasonable estimate.

Her torpedo bombers when attacking merchantmen, especially in convoy, are exceptionally formidable. The escorting cruiser or cruisers can offer little protection to a convoy covering a large area. To be effective anti-aircraft fire requires an intricate control system which is unlikely to be fitted in merchantmen. Owing to the great superiority in the speed of aircraft, scattering the convoy is unlikely to be effective. Attacks can be repeated at intervals throughout the day. Such a raider would present a difficult problem to the convoy organization, and, if the convoy system be abandoned, the work of submarines and raiders of the " Wolf " type is much simplified.

In one respect, the raider may be said to possess a great advantage as regards evasion from attack. A gun battle can be reported to within a mile or two, but if the raider is out of sight when her aircraft attack all that can be said is that, subject to navigational considerations or the known position of other units belonging to the defending side, she is somewhere within a hundred miles radius, i.e., within about 31,500 square miles. The difficulty of finding such a vessel as compared with one whose position is approximately known needs no stressing. The value of aircraft in the search is also apparent.

Again, the raider's aircraft may save her a lot of fruitless steaming and also give her warning of impending danger. She may be able to use her aircraft while herself immune from attack other than from the air. It may be recollected that the early torpedo aircraft in the late

war flew over the Bulair Peninsula and attacked ships in the Sea of Marmora while the carrier remained secure from attack other than by submarines or aircraft. Such a raider could by means of her aircraft attack lightly defended harbours or, perhaps, bombard from behind a smoke screen using her aircraft to spot.

If chased by a cruiser, in suitable weather conditions it might be a nice point as to which would be the better off, the raider with operating aircraft or the overtaking cruiser when out of gun range. Such a raider might reasonably have from eighteen to twenty-four aircraft, of which perhaps fifty per cent. might be available for use against the cruiser. In such circumstances the raider must surely be considered to have more than a reasonable chance in the fight.

Whether such carrier-raiders would be constructed is, of course, problematical, but it cannot be denied that the idea must make an appeal to an enterprising nation whose opponent has a vital sea-borne trade. It will be remembered that the " Wolf " carried a small seaplane and, although it was not used for attack, she may perhaps be said to be the forerunner of the type forecasted. It should be noted that no suggestion is made that carriers would be detached from the main fleet, of which they are a recognized part, but it is suggested that special vessels might be converted or built. One effect of such raiders would be virtually to increase the focal and terminal areas.

The value of aircraft against such raiders is fairly clear. Their speed, ability to traverse land or sea, and the vulnerability of the raider all point to their utility for this work. The carrier-raider may, instead of using her aircraft to attack the convoy, concentrate initial efforts on the escort, with the idea of either attacking the convoy at leisure, perhaps by means of the ship herself, or else by other vessels called up to help.

As an antidote to the raider, the platform cruiser, in which part of the gun armament is given up in order that she may carry aircraft, suggests itself. With her aircraft she might be able to locate and destroy the raider, and this type of vessel would seem to be very suitable for future escort work. No attempt will be made to envisage particular situations but it may be that in future trade defence problems there will be games of long bowls between attack and defence by means of aircraft.

Fortunately for the protection of trade, with the present design of aircraft, a landing-on deck is necessary, unless the more limited seaplane is used, and this deck is the real ' heel of Achilles ' of a carrier.

Other means of attacking such raiders will be considered later.

A submarine aircraft-carrying raider is, probably, not at present a practical proposition.

Minelayers.—This type of vessel calls for no special comment. When sighted, she is exceptionally vulnerable, especially if she has mines on board. Aircraft may, in certain conditions of sea and visibility, be able to locate mines laid near the coast.

The foregoing remarks also apply to submarine minelayers.

Aircraft.—When the War started in 1914 experience of aircraft armament was practically non-existent, and there is no need to recapitulate the developments in air fighting during hostilities, as they have been told many times and in many ways. Since 1918 there has been practically no air fighting. Except for improvement in reliability and in details, the armament of aircraft is substantially the same as it was at the end of the War. The machine guns are small and, owing to the difficulties of fire control, only guess-work sights are at present used. The equipment—namely, guns firing along the line of flight or else mounted on a ring or other moveable mounting—has proved satisfactory for the attack of ground objects, which are practically the only military objects to have been attacked since 1918. This last fact may have kept development along the previous lines, and the standard equipment is essentially designed for close range action. It should also be noted that a modern aeroplane will probably take more punishment.

For tactical success in air defence one at least of the three following conditions seems, at present, to be necessary. Firstly, a defending aircraft must be in an intercepting position or, secondly, it must not be sighted by the enemy until at close range or, thirdly, it must have a considerable superiority of speed in order to bring the raider to action in a comparatively short time. Through the high speeds which are being developed surprise is facilitated and interception rendered more difficult. To-day, the performance of day bombers approaches closely to that of so called fighters. Clouds, too, offer great powers of evasion, and the probability of bringing raiding aircraft to action is not, as yet, great. The chances of doing so could be improved by developing weapons which are efficient at longer ranges. There is so much ground to be covered in this direction that a nation which studies it systematically may well spring a big weapon surprise on its less imaginative opponent. A high proportion of air fights in the late war were indecisive, even with a big disparity of performance, and many aeroplanes had no difficulty in breaking off action when they wished. So far, it looks as though those conditions would still maintain.

Another aspect of air fighting in the protection of trade may be considered. Aircraft suitable for anti-submarine escort work or long distance reconnaissance require to have very good endurance, and are consequently large. It may be possible, by putting in a number of gun

positions, to give them good powers of defence, but, owing to their lack of manœuvrability and comparatively slow speed, they cannot be regarded as a means of protection against attacking aircraft.

In the War, a fighter was flown off the top plane of a flying boat, but, of course, it was not landed on. Eventually, escorting aircraft may have some such additional means of defending sea-borne trade against air attack. This allusion to aircraft themselves acting as carriers affords an appropriate opportunity for mentioning airships. Their future is at present uncertain, but if the difficulties in the transport of helium can be overcome one of their big disadvantages disappears. If available and if adapted for aircraft carrying, they may have considerable value for trade protection.[1]

To revert, however, to the employment of aircraft against their own kind, it seems that owing to the element of surprise, the short range at which their weapons are effective, and the powers of evasion afforded by clouds, they are no sure defence against this form of attack. Equally, aircraft in passive defence are not reliable. Although the figures in a future war will be entirely different, it may be recalled that in the late war the greatest number of aircraft which took part in raids on this country was forty-one, as compared to four hundred used in defence. In other words there were nearly ten defenders to each attacker.

Shipping on the High Seas.

At present, there are many stretches of ocean trade routes outside the radius of action of shore-based aircraft and, unless an enemy elects to send aircraft to sea, defending aircraft can be better employed elsewhere. But if he decides that the advantages of air attack justify him in sending raiders on to the ocean routes, the particular circumstances must decide whether the threat can be accepted, or whether it is necessary to afford air protection to convoys. This raises once again the question of the carrier versus the cruiser duel. In any case, if aircraft should be available on the high seas, they can, weather permitting, augment other means of defence.

Focal Areas.

The speed and mobility of aircraft within their radius of action have the effect of increasing the focal areas, and certain stretches of sea which formerly might have been considered as open routes may perhaps now be regarded as forming part of a focal area. From the point of view of the use of aircraft in the defence of trade, the worst situation would arise when a focal area was within range of enemy shore-based aircraft but out of range of the defender's aircraft.

[1] This Lecture was delivered before the " Akron " disaster.

In certain circumstances, the losses entailed by air attack or by other forms of attack assisted by aircraft might be accepted. If these losses could not be accepted, diversion of the route might be arranged. If, however, diversion were impossible and losses had to be kept to a minimum, air fighter escort by ship-borne aircraft through the area appears necessary, unless it were possible, by air raids from ships or by bombardment, to destroy the enemy air bases. Even then, the enemy might establish new aerodromes without much difficulty. The attack of aerodromes will be further mentioned in connection with the defence of harbours. A warning should be uttered with regard to air escort against air attack. The difficulties of tactical defence have been mentioned, and further reference will be made to the subject later, but it should be realised that fighting escorts cannot be a complete defence. They may be a palliative. It would be necessary to keep up a standing patrol during daylight flying weather through the danger area, and this may well be found to involve such a force of aircraft as to make the scheme impracticable. Although aircraft may increase the ease of location and destruction of trade in focal areas, they also, of course, facilitate the location of raiders and render their destruction easier. One thing seems clear, however, and it is that in a future war there will be a much greater demand for aircraft to be carried at sea.

Terminal Points.

Near terminal points, shipping can have the advantage of defence by shore-based aircraft, and up to some distance out to sea it may have the escort of suitable fighting aircraft. Provided that the terminus is not a neutral port, it may be that trade will be better protected than on the high seas, except in so far as the neighbourhood of the terminus invites attack. If the terminus be neutral, the lot of the defender is difficult, for a terminus resembles a congested focal area. Much of what is said later with regard to the defence of a harbour is applicable to terminal points.

Shipping in Harbour.

The defences of a harbour may consist of submarines, light surface vessels for patrol and sweeping, fixed defences, and aircraft. For reasons already given, patrol vessels cannot be replaced entirely by aircraft, but the latter may effect some economy in the number of such vessels and they will certainly increase the efficiency of reconnaissance. The value of aircraft as a means for defending a harbour against attacks by warships or raiders has already been mentioned, and it will be remembered that a practical test alone can give the answer. With regard to attack by air, some amplification of the remarks on air fighting seems desirable.

It will probably be impossible to place listening posts, etc., which are an integral part of modern air defences, round a harbour even when given unlimited time. The useful work of lightships in the late war in reporting hostile aircraft is not forgotten but, in future, aircraft will probably avoid these as far as possible, and denser air traffic may be expected. Lightships cannot be a substitute for properly organized listening posts.

Attacks on trade may be made with bombs requiring penetration for their maximum effect, with high capacity bombs relying on the unprotected hulls of merchantmen for near-miss effect, or with torpedoes. The last two require no height element in the attack to get their effect and probably a very low height will suffice for the first to get penetration through the light scantlings of merchant vessels. The low approach has several advantages for raiding aircraft. Their defence from the air is facilitated because they are more difficult to pick up than when against a sky background; an advantage which is enhanced at night. Other things being equal, the less the height the smaller is the area of the earth's surface over which aircraft can be heard. This state of affairs facilitates surprise. The gunners of the raiders have only the upper hemisphere to defend and in that hemisphere the field of fire is usually fairly clear. With a low approach the first that may be known of an attack may be less than a minute before its delivery.

In the late war, the enemy bombing attacks were conducted with whole squadrons and, once a raid was over, there was usually peace for the rest of the night. In future, flights or even single units may be used, and so keep the defences alert the whole night. From the attacker's point of view, a harbour possesses the extra advantage of immobility as opposed to a convoy, and this enables another form of attack to be developed, namely, the bomb with the long delay fuze, the delays ranging from a few hours to perhaps several weeks. To deliver such an attack, it is not necessary for the harbour to be occupied. If armed, and lying in the mud at the bottom of harbours, such bombs would raise difficult questions of location. When located, countermining would seem to be the obvious antidote and this must present inconvenience at least in a much used harbour.

If a harbour is within range of enemy aircraft, and provided that suitable aerodromes and types of aircraft are avilable, the enemy source of attack must be within striking range of the defending aircraft, and to attack this source would seem to be the best plan, but there are difficulties as will be pointed out.

Mention should also be made of the balloon barrage as a means of defence. A balloon barrage must rely largely on moral effect. There

are difficulties in putting one up on the seaward side of a harbour—the probable direction of attack—moreover, this form of defence is a handicap to defending aircraft.

The defence of harbours against air attack presents exceptional difficulties in view of the absence of an intervening defence zone.

Whilst discussing this subject, a situation which is likely to occur in a future war may be examined, namely, the attack of an air base by ship-borne aircraft. What has been said about surprise is, of course, applicable, but there is a difference when the question of damage is considered. Admittedly, aircraft are fragile and easily damaged, but some forms of defence denied to ships in harbour are available for an air base. Aircraft can be scattered over an aerodrome, they can be protected by earthworks, and they can be sent into the air at the first alarm if they are not already there. Even if a proportion is damaged at an important aerodrome, spares to replace damaged parts should be available, and these in their turn can be either scattered or stored in a place unlikely to be attacked. The work of replacement should not be long. The regular reconnaissance patrols carried out from the base should increase the difficulty of evasion on the part of the carrier, who will have to approach close for her aircraft to operate. Shore-based aircraft should, moreover, have a longer radius of action than those in the ship, and this may enable the carrier to be caught before she gets outside their radius of action. A flying boat or seaplane base is not so difficult because aircraft afloat are easily damaged and it may not be possible to apply all the other means of defence. The subject is one on which much can be said, but it is difficult to imagine that an aerodrome and its forces can normally be put permanently out of action by aircraft from carriers. There is also the big question of risk to the vulnerable carrier, and it would seem doubtful whether the danger to the ship would be justified by the limited amount of damage that appears possible to the air defences.

This situation is the counterpart of that which arises when air escort is necessary through a focal area within range of enemy shore-based aircraft.

STRATEGICAL CONSIDERATIONS

In examining details of some of the problems involved, no attempt has been made to consider whether aircraft will be available for the purposes so far enumerated or to discuss whether such dispersion of force would be justified. In a future war there will be demands for aircraft for all sorts of purposes in many places. There is, however, a wider aspect of defence of trade to be considered. As the defence of a country does not necessarily lie on its frontiers, so in a future war the defence of sea-borne trade will not necessarily lie entirely on the sea.

Where one belligerent is within air range of another, aircraft may be used to attack the ports of the enemy with the idea of destroying his fleet and his raiders. Even if it is not possible to attack all his ports, the attack on some must cause difficulties and perhaps congestion in others, to the detriment of his attack on trade.

Attacks on enemy air bases used directly to attack trade or to co-operate against it would, likewise, seem to follow. The difficulties of putting a landplane base out of action have, however, been discussed and it is probably sounder policy, if possible, to carry the attack one stage further back—to his aircraft factories.

Since naval vessels take so long to build, the attack on the enemy's naval munition works should not be given precedence over his vessels afloat.

It might be further pointed out that if land operations are involved between adjacent countries, factories whose output is military, as opposed to naval or air, must also be attacked. And these attacks will draw off aircraft for their defence, which might otherwise be employed in the war at sea.

The difficulties of air defence have been pointed out, and the best use of air forces is to keep the enemy on the defensive. The more of a nation's air power that is allotted to defensive work with its unreliability, the less there will be available for offence. Only such units as are absolutely essential to defence should be so allocated. The value of taking the offensive where possible is well known in naval warfare, and it may be recalled that Drake, faced with the problem of stopping the Spanish Armada urged: "With fifty sail of shipping we shall do more good upon their own (the Spanish) coast than a great many more will do here at home." *Mutatis mutandis*, Drake's plea applies to the use of air power.

In so general a review as this, no attempt will be made to dogmatise or to consider any particular situation. The problem is simple in principle but intricate in detail, and the particular circumstances in any war must decide the plan. It may be that, in a future war, shipping will receive its main air protection, and perhaps its best air protection, from landplanes, which will start from many miles inland and deliver their main attacks on objectives many miles inland, using the sea only where necessary as part of their route. If the belligerents are not within air range of each other, direct attacks must be from advanced territories and, owing to delays and difficulties in supplies, it will obviously not be possible to make so intense an attack. In such circumstances, the value of aircraft for protecting sea-borne trade would seem to be more along the lines indicated earlier in this lecture.

CONCLUSIONS

The subject under discussion is very speculative and it is dangerous to dogmatise, but it is possible to draw some broad conclusions. In view of the air developments which have taken place since 1918, air progress at each step must be watched from the point of view of its potential effect on sea-borne trade. The experience of the late war must be used with caution. Marshal Foch went so far as to say: "I must impress on you, gentlemen, to forget the last war, not to imagine that the next one will begin where that one left off. The next war will be as completely different from the last as the last was from the one before." Some tactical uses have been suggested but they cannot claim to be complete. In certain areas air escort for trade against air attack will be desirable and perhaps necessary. The uses of aircraft both as an adjunct to surface forces for reconnaissance and also for attack will be of considerable assistance against surface raiding forces.

The position of a country which possesses a vital sea-borne trade and which finds itself in conflict with an unscrupulous enemy, but has under-estimated the potentialities of aircraft, may well be worse than that of our country in 1917.

The principle of concentration of force must be observed and any tendency to unnecessary dispersion checked severely. No more aircraft than are absolutely necessary must be allotted to the defence.

Two broad principles remain. Firstly, passive defence is ineffective. Secondly, the air is all one. It does not recognize boundaries between sea and land, and it is impossible to separate its functions over the two elements. The air menace over the sea may be reduced by air activity over the land.

DISCUSSION.

LIEUTENANT G. B. H. FAWKES, R.N.: One of the most important points brought out by the Lecturer was that there is no international law banning the use of aircraft against merchant ships. We all know that the submarine is limited as regards the means she may use legally to attack merchant ships, but there are, as yet, no restrictions upon aircraft. When the preliminary discussions were held before the Hague Conference of 1922-23 the British delegates proposed that the words "or aircraft" should be added to the Washington Treaty which dealt with the limitation of the action of submarines. This addition was not adopted because the discussions showed that there was no agreement on the rules for the visit and search of merchant ships, even by surface craft. The British and Italians held the view then, and I think possibly they do still, that warships should be allowed to deviate merchant ships for the purpose of visit and search, and it was because that point was brought up that no conclusion could be reached about aircraft.

Nevertheless, we see by Article 50 of the Hague Conference that it was proposed that military aircraft should be allowed to deviate commercial aircraft for the purpose of visit and search—presumably because they cannot visit and search them in the air. Why should this not also apply to the sea?

I think it is possible, in fact I think it is extremely likely, that in future the aircraft of a country which wishes to attack trade can do so within what we regard as international law by ordering the merchant ship to deviate for the purpose of visit and search, and any refusal to comply would be considered a resistance to visit and search thus entitling the aircraft to attack. Therefore, I think aircraft attack on trade is one of the greatest menaces of the future.

CAPTAIN E. ALTHAM, R.N.: The question of "visit and search" has been alluded to several times in the course of various lectures in this Institution. Those of us who attended the very able lecture given by Commander Bowles, lately, on "The Freedom of the Seas" will remember that he explained very clearly that the word "search" as used in international law does not mean that a merchant ship in time of war can be boarded, that her cargo can be broken into, and that her holds and spaces can be systematically searched. All it implies and allows is that her papers and other documents can be examined, and if the boarding officer then thinks there is reason to believe that she may be condemned as a good prize it is his responsibility—and a very grave one at times—to send her into a port or to enclosed waters where she can be systematically searched.

One has often heard it said that aircraft will have the very greatest difficulty in carrying out visit and search. Personally, I think that provided it is calm enough a flying boat, for instance, need have no great difficulty in putting somebody on board, and, even with her limited armament, compelling the ship to submit to a search of her papers from which it can be decided whether she is likely to be condemned as a good prize or not. But the real problem of that aircraft will be how to ensure that a ship will obey an order to go into waters where she will be taken in charge and systematically searched.

The Lecturer visualised that in the next war there will be a number of converted merchant ships which will carry aircraft either for attack on trade routes or for the defence of shipping. But there are, I suggest, practical limitations to the use of such extemporised carriers. Unless the very largest vessels are converted for the purpose, there will be difficulty in flying off, and still more in landing on, in any but a very slight sea—a condition which certainly cannot be counted on except in narrow and sheltered waters. Aircraft carried in smaller ships will more often than not be immobilized by the weather. Again, the experience of the late war showed that the very large merchant ship, like the "Aquitania," was not a success if converted to be used for a purpose for which she was never designed; she is most uneconomical and her fuel requirements are prodigious. These are only a few of the difficulties in the way of using aircraft effectively on the high seas from converted liners. I do not say they are insuperable, but I do suggest that we are never likely to see hordes of aeroplanes launched from and flying over and around shipping in mid-ocean whether for purposes of attack or defence.

I was interested—because I have followed the progress of the airship from its very early days—in what the lecturer said about the potentialities of airship carriers. I need not remind you that the United States are going ahead, and have now two airship aeroplane carriers, one of which is to be based on each side of the Atlantic.[1] This opens up a very considerable vista in regard to the attack and defence of trade out over the broad oceans, because the difficulty of landing on, does not arise to the same extent with airship aeroplane carriers as it does with sea-borne carriers. The "Akron" has made many hundreds of successful experiments in flying off and hooking on.

[1] The "Akron" has since been destroyed in a hurricane, but the potentialities of airships as carriers for high-sea work remain.—EDITOR.

One question I would like to ask is, what are the relative advantages of the small airship for anti-submarine work, convoying, or escorting, as compared to the flying boat. One obvious advantage for the small airship is, of course, that she can keep station with her convoy economically, in a way a flying boat cannot do. Are there any other advantages?

SQUADRON-LEADER R. S. BOOTH, R.A.F.: I was fortunate enough to fly in the American airship "Akron," and I witnessed over a hundred landings made by the aeroplanes she carried.

It seems to me that the radius of action of the aircraft mentioned in the lecture is so limited that they will not be of any great use for protecting ocean-going trade. In many cases they would not be over the ocean but merely operating close to the shore. On the other hand, even an airship, if filled with hydrogen and carrying aeroplanes, would be comparatively safe if she had a maximum speed of 80 miles an hour.

ADMIRAL SIR REGINALD TUPPER: We seem to have an advantage for using flying boats and seaplanes in the possession of our naval bases in every part of the world; and, although their range is rather limited and their speed is rather low, it seems to me that these aircraft could be used very effectively on the trade routes for attacking the enemy's trade, and also for protecting our own vessels. I should like to hear whether that point has been considered, especially in view of the fact that there is hardly more than 1,500 miles of sea round the coasts of the world, except on the West coast of America and the East coast of South America, where we could not manage to have bases, for flying boats, seaplanes, and, perhaps, small airships. I should like to know if that idea is at all practicable, and whether it would not be likely to prove more efficient than using enormous ships carrying aircraft.

THE LECTURER

The Lecturer, in reply, said: Visit and search would be an extraordinary difficult task to carry out with regularity from a flying boat. The most a flying boat can carry is a small dinghy, not very seaworthy. It would not be a very difficult thing to train the crews of flying boats in the examination of ships' papers so that they would know what to look for. There is the other point of keeping control of a ship when she is ordered in for search; that is really a question of naval organization, and of whether the flying boat would be able to report by wireless that such-and-such a ship had been ordered in, giving her position, and whether the naval authorities would then be able to take the necessary action.

I know the value of the carrier-liner is debatable, but I think I uttered a fairly plain caveat at the beginning of my lecture when I said that weather would have a very big effect on all operations. I will go even further, and suggest that a nation which proposes to adopt this form of warfare might argue "the Indian Ocean during the South-West monsoon is not a place to which to send our carrier raiders." Or if the Horn regained any of its old importance as a focal point, such raiders would not be sent there. But there must be many occasions when, even with small and medium sized ships, an aircraft-carrying raider would be a paying proposition for use against a country with vital sea-borne communications. In any case, the potential use of such raiders would have to be considered in relation to the plan of the particular country or countries at war.

With regard to the relative advantages of small airships as compared to flying boats for escort work, one must admit the advantages of the small airship for convoy work inasmuch as she can keep with the convoy, and she has probably a good deal

longer endurance than the flying boat; but I would like to draw attention to what I said at the end of my lecture, namely, that, in my view, too high a proportion of our aircraft was used in the late war on passively defensive work. I think in a future war one will find that any nation will employ its air forces far more offensively than was done in the late war. To give a more specific answer to Captain Altham's question, I can see no reason against the construction of such airships. They would require rather bigger sheds than flying boats need, but if they are thought to be worth while I have no doubt the countries who might use them would do so, but they would have to be kept out of range of enemy aircraft, as they are not suitable for use in waters where there are active air operations.

CAPTAIN ALTHAM: It is really an anti-submarine problem more than an air one, is it not?

THE LECTURER: Yes. I have not got the figures of performance of the various types of aircraft, but I think a modern flying boat, although it would be more expensive, would be able to carry better and heavier bombs, and would certainly be able to get to the spot a great deal more quickly than an airship.

The next point was about aircraft-carrying airships. At present airships are filled with hydrogen, and as such would be very liable to be shot down if any aeroplanes from ships could get near them; but there is certainly the advantage which Squadron Leader Booth claimed for them. Whether a country will expend money on building these ships is really a matter of high policy.

Admiral Sir Reginald Tupper mentioned the question of bases. Here, again, I tried to keep the lecture on general lines. I quite agree that we have an enormous number of bases—most of the focal points are under British control—and it would be possible to put seaplane bases there if we were justified in diverting our air effort to passive defence rather than to active offence.

ADMIRAL SIR REGINAL TUPPER: I look upon that as active offence, because in addition to protecting our own ships we would be attacking those of the enemy.

THE LECTURER: Yes, but here again it must depend upon what enemy we are fighting. I suggested that the best use for air power would be active offence, and that against the enemy's aircraft factories, if possible.

ADMIRAL SIR REGINALD TUPPER: It seems to me we ought to have aircraft kept there in case of accidents.

THE LECTURER: The aircraft that we have, and that we can use, is governed by the question of expense. We should like to have a good many more than we have, but in the present state of national finance we cannot get all we would like.

THE CHAIRMAN

Everybody will agree that we have had a very interesting lecture. It is an extraordinarily difficult problem to deal with because, as the Lecturer so ably pointed out, aircraft have developed so very much since the last war that we have very few criteria to go upon. As a naval officer, I naturally approach the subject from the naval point of view. Our responsibilities at sea are very heavy, and the forces which we have to meet those responsibilities are very small; so that, if we can get any assistance in our responsibilities for defending trade from aircraft, it is natural that no one would welcome that assistance more than the Navy.

I think the Lecturer made one or two points quite clearly. One was that he did not see that aircraft could definitely take over the protection of trade at any

particular point, whether the area under consideration is within the range of shore-base aircraft or not. That, of course, is unfortunate. It would be better if aircraft, for instance, could take over the protection of trade within range of shore-base aircraft, leaving it to the men o'war to work further afield, which they are capable of doing. With the very small forces which we have at the present time, it is important that we should not have any overlapping of any kind, and that this sort of thing should be well thought out so that aircraft can at all events release some naval vessels in a certain section of the work, so that these vessels can work further afield.

Our merchant fleet in the past, and in the late war—and I feel it will be the same in the future, as far as one can see at present—relied for their protection partly or principally on the Navy, but they have also relied to a great extent on themselves. As you know, in the old days our merchant ships were comparatively heavily armed, and in the recent war we had them lightly armed for a different purpose. Also they trusted very much to what I always like to refer to as the obscurity of the ocean for their safety. It is necessary to go to sea in order to realise what the obscurity of the ocean means, and to take part in strategic exercises in order to discover how difficult it is to find any object at sea. It is that fact upon which our merchant ships have always relied in the past for their safety; that is to say, by evasive routeing. There is no doubt that aircraft will diminish that obscurity to some extent. On the other hand, they are a two-edged weapon, and the convoys themselves, by the use of aircraft, will be able to locate their possible enemy earlier than they would otherwise.

Another point which makes itself clear to me is that so long as the aircraft out of range of their shore bases need to be carried in ships, the principles of naval strategy stand. It becomes a naval war, and the aircraft are adjuncts, and assist us in carrying out the role which the Navy has always performed in the past.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE RUSSIAN FIVE YEAR PLAN

By SIGNOR CARLO SCARFOGLIO.

On Wednesday, 15th March, 1933.

MAJOR-GENERAL SIR ALFRED KNOX, K.C.B., C.M.G., M.P., in the Chair.

THE CHAIRMAN, in introducing the Lecturer, stated that Signor Scarfoglio not only enjoyed a European reputation in the spheres of literature, journalism and finance, but also sprang from a distinguished Italian family. Signor Scarfoglio's father, moreover, had also been an important figure in the political and journalistic world of Italy.

LECTURE.

IT is surprisingly easy to express an opinion upon the intimate character of Russian economy as it has been shaped by the process of industrialization, yet it is the most difficult thing in the world to attempt to prophesy what the future success of Russian industrialization will be. The first problem is one which belongs to the field of theoretical economy, and in theoretical matters there exists a certain quantity of well-defined facts which can assist the searcher to reach some definite conclusions. But in a practical and continuous process, such as the industrializing of a country, it is absolutely necessary to rely on instinct much more than on facts, because the facts are changing all the time, and look as one will, there is after all nothing else to be found beyond changing facts. Still, I hold also that the first duty of an observer is to form an opinion, no matter how short-lived it may be, on the state of the problem as it presents itself for the moment, and to refrain from venturing on any prophesy for the all too uncertain future.

To come to facts. When I visited Russia industrialization appeared, for the time being, to have failed to achieve its main aims. The time I allude to was the end of the fourth year of The Plan. Shortly after my departure the failure was publicly acknowledged in the Congress of the Communist Party in Leningrad, so that I was able to conclude that my impression had been, on the whole, correct. In that Congress Stalin declared that the shortcomings of the Plan were to be attributed to

technical errors. As the Plan is, or should be, after all, a purely technical undertaking, the explanation does not explain much. But I believe that the key to the partial failure of the Plan is to be found in this fact, namely, that the Plan was not from the beginning, as it should have been, a purely technical undertaking; on the contrary the political element interfered to such an extent in its genesis that it is difficult to say whether it can ever be put straight again.

It would be an easy task to trace the political origin of the Plan, and to explain it in full detail, but this is not our purpose. What I noticed everywhere in Russia was that nothing seemed to be done to answer its particular purpose, but rather to achieve some more general end, whose meaning was sometimes quite obscure to me. Moreover, every separate undertaking seemed to stand by itself and to have no connexion whatsoever with the rest of the general activity of the country. This is an impression which is familiar to everyone who has studied the working and the results of any industrial scheme which has taken its birth in the brains of man, and not in the actual needs of everyday life. Because Russians are great Darwinists I tried to put this impression in Darwinistic terms: and I said to myself that they had reversed the order of Darwinistic thought, and acted as if it was the organ which created the function, and not the function which created the organ.

Coming from theory to practice, I was able to study the working of this principle in one of the biggest undertakings of the Plan, that is the Molotoff Automobile Factory in Nijni Novgorod. It is true that when I visited this factory it was closed, owing, it was said, to some misunderstanding between the management and the staff. The Molotoff Factory is an enormous giant stretched out in a desert of sand a few miles from Nijni. It was bought wholesale from the Ford firm and was intended to turn out 140,000 cars per year. It was a splendid thing, but even I, not a technical expert, could see what the mistakes were which had brought about its closing. First of all it had been bought before ascertaining whether Russian metallurgy could supply the high-grade metal which is essential to Ford production. Secondly, the location of the plant involved a very difficult problem of transportation, since the plant was, as I have already mentioned, in a desert of sand, some miles away from Nijni. Now, it had not been intended to turn out complete cars, but only parts, which were to be assembled in four different plants situated in very distant districts of Russia. It was clear, then, that a highly developed system of transportation was needed; but from Nijni there existed only one railway line, and that did not serve the four plants but only went to Moscow. There was also a narrow gauge line, but that only led to the place from whence the raw material

was obtained. There was the Volga, it is true; but the factory was not on the Volga, and then the Volga is only open to navigation in Summer. Besides, the bridge over the Volga was still the old wooden bridge, which is regularly swept away by the Spring floods; when I passed it it could only be crossed on foot, and was not available for heavy traffic. So *there* stood that splendid factory, like some huge giant, lying, for the time being we hope, idle and useless. Neither could I see how it could be brought to activity again unless all that accompanies a great enterprise of that nature, that is, transportation, regular supply of suitable material and a purely technical management, were created around it. From this instance, which is far from being unique, but has the merit of being the most striking of all I came across, I could infer that the Plan was far more faulty in its origin than in its results: that is, because it had been studied more with a view to achieve sensational and resounding effects than to serve immediate needs. The undisputed fact that Russia at large was in a state of continuous shortage of every needful commodity showed that similar mistakes had been committed wholesale. Everywhere the chief blunder seems to be the failure of the Plan to provide adequate transportation for the enormous, increasing production which it intended. To put it into figures: the Plan itself spoke of an increase in mileage of railway lines of about 20 per cent., when in the same period of time the general production was to be increased by more than 100 per cent.

It is true that the efficiency of existing railway lines was also to be increased according to the Plan. But all those percentages tell very little, because they start from such low levels that what might seem to be a very substantial increase on paper comes to almost nothing when put into actual Russian practice. That the system of transportation in the fourth year of the Plan was much below the real needs of production, although that production was itself very low, is a fact which I could confirm everywhere; and the reason for this, as already stated, was that the Plan had, from its beginning, aimed at striking the multitude with visible and sensational results, while it had neglected that obscure problem of transportation.

Another most important factor that had been neglected, or rather, in my opinion, mismanaged from the outset, was the necessary connexion between industrial and agricultural economy. Mechanization of agriculture had been resorted to without considering the real needs of the peasant population. The Moscow Government had acted as if Russia were a very sparsely populated country possessing a vast extent of uncultivated and profitable land. This is not the case. Russia has an enormous peasant population, estimated at from 80,000,000 to 100,000,000,

and it is far from true that the whole of this population is able to get its food from the land itself. Nearly 40 per cent. of the Russian peasants only get a part of their food from the land and have to make up for their shortage by the exercise of different crafts and very often hiring themselves for work in the towns. Although a part of those needy peasants finds an actual relief in urbanization, which is a part of the Plan, this is more than counterbalanced by the fact that mechanization leads to an enormous reduction in the employment of human labour in the fields, while industrialization spells death to the village crafts.

I only visited one collective farm, but what struck me most was the enormous number of peasants who had to live on what was only a small and poorly managed farm. And I must say that I found no trace of real mechanization on this farm. But even taking into account the figures given by the Government, the proportion between the amount of cultivable land and the number of peasants gave one hectare and a half to each peasant, which is a condition of things entirely contrary to any real state of mechanization in agriculture.

Mechanization, indeed, has an economic value only where it supplies an actual need created by shortage of labour, but where there is, as in Russia, rather a surplus of agricultural labour, and where it is a question of making the land feed the peasant, it is quite out of place. I believe that even putting the question of property aside, Russian peasants feel that mechanization, especially when pushed to such extremes as stated in the Plan, is a menace to their very life. This is, perhaps, the obscure reason why they so fiercely oppose the Moscow Land Programme, and why the Five Year Plan has started, and still lives, in an atmosphere of civil war. But, again, mechanization and collectivization were not, as it would appear, the results of a technically qualified scheme, but the results of a political current of thought. This mixing of political assumptions and of technical requirements has practically led to an ill-assorted construction, which does not satisfy either the politically-minded or the technically-inclined; and, what is worse, it has led to an even greater failure on the agricultural side of the Plan than on the industrial side. Even here the mistake was a mistake of thought. I mean that the actual conditions of Russian agricultural possibilities had not been taken into account. A survey of Russian agriculture in the past is sufficient to show that the enormous developments, which were not only predicted but considered as a necessity in the Plan, were impossible to realise, especially in a slow-going process like agricultural improvement. But the political element in the Plan itself did not admit of argument, and the Moscow Government treated rural Russia as if she had been some vast, new continent, devoid of population and

brimming over with fresh possibilities. As a matter of fact the technique recommended by Stalin was in so many words the technique of the "pioneer." Now this technique is absolutely incompatible with the actual conditions of a country where the peasants are already feeling the pinch of land shortage and where the allotment of land per head is even now insufficient. The result has been that, to justify the wild hopes expressed in the Plan, the well-known system of the "three fields" has been put aside, and the entire arable land has been put under crop without considering the consequences.

During the first three years of the Plan this policy had led, as is well known, to comparatively good crops, but in the fourth year the gradual exhaustion of the land was already becoming apparent, and the crop was an undoubted failure. The land was not being fed, and this was, of course, an appalling menace to industrialization. Neither could I see, for the time being at least, a way out of this difficulty, because it was not simply a matter of bringing agricultural production to a sufficiently high level to feed the population. But I knew that the financing of the Plan depended to a great extent upon the export of wheat; while, in the absence of wheat to export, Russia could only fall back on her staple exports, that is, wood and petrol.

Was the Plan, then, an entire failure? No; but those aspects of it which were not a failure related essentially to undertakings which are always assigned to state management by every economic doctrine, even the most conservative. I allude to Public Works, whose very name shows that the common opinion holds them to be outside the scope of private activity. I cannot say that in its policy of Public Works the Soviet Union has not achieved some good and substantial results. Even in the field of primary industries, such as the production of electric power, its policy has been beneficial, for the future generations at least. It is still a debatable question whether the production of electric power should not be assigned to the state, even in capitalistic countries. But, when it comes to industries of transformation the state seemed to be almost helpless; and the political fear under which the technical management of the industries had to work did not conduce to order and efficiency.

As to the possibilities for the future, I will not venture on any prophecy because technical mistakes can always be made good in the course of time. But I can at least say this, that it is above all a question of correcting original mistakes; and this will require a longer time than was needed to make them. Besides, it is also a matter of psychology. Unless the political ceases to interfere with the technical element, mistakes can only be prolonged in time and the country exposed year after year to needless suffering.

As for the fear, which has been so much circulated abroad, of seeing Russia enter the world's markets as a new and formidable competitor I must say that this is absolutely out of the question for a very long time to come. For many years Russia will not be in a position to supply her own markets, let alone foreign ones—if petrol and wood are excepted. Those exports which so alarmed opinion in general a few years ago, were due to good crops obtained through the reckless exhaustion of the land and through a system of semi-starvation of the Russian people. The conditions for manufactured goods are even worse, because it is not only their low quantity, which is an obstacle to export, but also the incredibly low grade of their quality, which would not make them acceptable on any market, except the Russian. If I add to this circumstance the fact that Russian economic opinion was, just about this time, wavering from the first wild hopes of world competition to the more homely and unambitious conception of a closed economy for Russia, I will have said enough on this point.

But, coming back to the more familiar and safer ground of theoretical economy, what has been the internal result of the Plan? Simply to detach Russia for ever from Marxism. There are two kinds of Marxism; one is a political and economic slang in which there is found every sort of admission and every sort of conflicting economic theory. The other is, however, the real Marxism, as was expounded in very precise words and some equations by Karl Marx himself. It is from this Marxism that Russia is drawing away. It is a strange coincidence that the fiftieth anniversary of Marx's death took place on 14th March, 1933, and that Karl Marx died in London, where he had fled for refuge, although he had been during his life the fiercest opponent of English political thought.

The reason why Russian state monopolism stands in direct contradiction to real Marxism can be explained in a few words. According. to Marx the transition from natural to artificial economy takes place when an object is no longer valued because it is useful, but because it can be exchanged. This transformation from value of usage to value of exchange leads to the selection of a particular merchandise which serves as a standard to determine the value of exchange of every object. This merchandise is called by Marx "form-money." Once form-money is introduced, capitalism begins, because everything having an economic worth can no longer realize its value of exchange unless it is brought to the market and sold for money. So it happens to this gift of God to man, his working power. The main feature of capitalism is buying and selling of working power.

The second main feature is the production of "surplus value," which is obtained by sending money into the market and getting it back in

greater quantities. I will not go into Marx's analysis as to the origin of surplus value. I will only say that his conclusion is that surplus value can only be obtained by paying to the working man a lesser amount for his work than that actually received by the employer.

No play of circulation, says Marx, no gambling of trade can give an atom of surplus value unless it is obtained in the way I described. This is why Marx equates surplus value with unpaid work. He even gives a limit to the amount of work which can be paid to the working man if surplus value is to be obtained at all. This limit is the subsistence limit, which includes just as much money as is required to allow the working man to recuperate his working power from day to day and to feed and give professional education to his children. All this, says Marx, has to be included in the subsistence limit, because only in that way can the working man be, so to speak, prolonged in time and transformed into a perpetual quantity.

The third feature of capitalism lies in the way surplus value is extorted from the working man. As the working day has natural and legal limits, the only way of making him work more than he is paid for lies in paying him a fixed salary, more or less corresponding to the subsistence limit, and in intensifying his work through the use of factory organization and of industrial machinery. On the evil results of industrial machinery upon the life and happiness of working people Karl Marx published more than 200 pages. To compare these pages with the Russian craze for factory organization and for industrial machinery is to ask oneself whether Russians have ever read "Das Kapital," Marx's main book. But when one recognizes in the state treatment of the Russian people every single feature that Marx has described as characteristic of capitalism, from value of exchange to form-money, from form-money to actual buying and selling of working power, from the payment of a fixed salary to the production of surplus value, that is, unpaid work, duly registered in the profits inscribed in the official budgets; even down to the subsistence limit, which is, for the first time in the history of capitalism, acknowledged as a legal limit in the system of double prices, then one has nothing more to ask oneself. All the forms are there; and, since in good Marxism the economic forms can only have one meaning and can only lead to determined results, it is no use arguing that the system is socialistic because the property of everything belongs to the government.

What Marx objected to was not private property; on the contrary it was one of his illuminating thoughts that capitalism is a natural enemy to private property. Marx objected to the whole economic structure of capitalism and said quite clearly that not until its main

forms were abolished could any real progress towards economic justice be made. Now through the influence of the Five Years' Plan, and maddened, as it were, by the vision of enormous riches in the near future, the Russian Socialists have in a few years reinstated every single form belonging to capitalistic economy with the only reserve that everything should belong to the state, so that the only convenient economic definition of the Soviet State is that it exercises a form of state capitalism or rather of state monopolism.

We have many historical examples of such a form; in most of the ancient Eastern nations the whole property and the whole industry of the country belonged to the state, yet nobody has ever said that they were socialistic states. I can only conclude that property and capitalism are perhaps a moral disease which can infect public individuals as well as private owners; and that the only way of securing socialism in the future will be to make the state, perhaps, a trustee of public property, but never a real proprietor.

DISCUSSION.

COLONEL H. L. WOODHOUSE: I should like to ask a somewhat technical question. My experience in India is that whereas we can get a fair number of mechanics whose skill is sufficient to keep machines in order, the average Indian will go on running a machine such as a locomotive or motor car when, to the European ear, it is urgently demanding attention. In other words, unless someone stands over these Indians they will run their machines to death, when a little attention would enable them to carry on for a very much longer time. Is that also true of Russians?

LIEUT.-COLONEL W. H. JONES: The Lecturer mentioned that the Plan had been less of a failure in regard to public works than in regard to industrial and agricultural development. I should like to ask how far public works include the housing of the working classes, that large population of new labourers or new mechanics necessitated by the Plan and by the industrialization of the urban centres. I believe large numbers of what are called communal buildings have been constructed for housing many thousands of workers. It would be of interest if the Lecturer could give a few details as to their success or otherwise, and on what lines, communistic or otherwise, they are run for the benefit of the workers, and whether the workers appear to be comfortable and happy under such conditions, as compared with the conditions in which most of them must have been brought up in their village life.

CAPTAIN E. ALTHAM, R.N.: I gather that the development of Russia to-day, certainly in technical matters, has not come about altogether from the almost artificial operations of the present political regime, but that a very considerable proportion of it is due to the ordinary evolution of civilization and technical development generally. Moreover, it would seem that some of the most successful developments of industrialization in Russia were originated long before the upheaval of 1917 by the old technicians in the country, and were actually based on their plans, a fact for which, I believe, there is documentary evidence. It would be of interest if the Lecturer could confirm this impression, and tell us

to what extent Russia to-day owes such success as she has had in industrialization to her present political regime and to what extent it is due to the normal course of development of the civilized world.

COMMENDATORE LUIGI VILLARI: I should like to ask how much of the development of Russian agriculture and industry is being carried out by foreign experts and engineers, and whether these foreigners are able, in Russian conditions and with Russian workmen, to do the same sort of work they would be able to do in other countries, with workmen of other nationalities; whether they find it difficult to carry out the work that their intelligence and their knowledge would enable them to carry out if, instead of having Russian workmen to deal with, they had workmen of other countries. Can the foreign engineers get as much out of a staff of Russians as they could with workmen of other nationalities?

THE LECTURER:

I was asked how the Russian mechanic compares with the Indian, who learns how to run a machine but takes no care whatever to keep it in proper condition and runs it to death. That this does occur in Russia is well known and is the subject of complaint by all foreign experts in the country, especially so far as tractors and motor cars are concerned. The Russian agricultural engineer is accustomed to race his tractor as if it were a racing motor car, and thus destroy it in a few weeks. You will see, therefore, that the mentality is absolutely the same. Everywhere, moreover, one sees motor cars, and especially motor lorries, going about perfectly empty. I suppose the drivers get into the habit of driving them empty.

One of the questions which interested me most in Russia was that of the housing of the working classes. Some effort has been made to house all the people, chiefly peasants, who come from the country to work in the factories in the towns; but it is only a beginning. In Leningrad I asked if I could visit a workmen's district, and I noticed a very fine hospital for the prevention of occupational diseases, but the workmen at that place were housed in wooden huts, unfit to be visited, so that the guide refused us permission to see them. In that case the workmen were not properly housed. I also noticed they had no supply of water, because they had only wells, and the women were coming home with pails full of water.

In Moscow, I insisted on seeing some workmen's dwellings, and after a good deal of insistence we were taken to a workmen's district where we saw some cottages which were not very different from workmen's cottages in England, but there were only sixteen of them. Every one of them held two families, yet I was told there were 13,000 workmen in the one factory. I was astonished at this number, and asked about it twice, but it was insisted that there were 13,000. It was a rubber factory and very small, so I suppose they worked in at least three shifts. This was about the only type of lodging built for the purpose of housing workmen that I saw, not because I did not try very hard, but because there always seemed to be some difficulty in the way of my seeing them.

As to the question of housing generally, the Russians themselves own that they have not provided proper housing for the workmen. At the present time, the average housing room for each individual in Moscow is 2 square metres, or about $2\frac{1}{2}$ square yards. Conditions are a little better in Leningrad, where they can give 4 square metres to each individual. This applied in the summer of last year. Of course, things are infinitely better in the country, where generally every

peasant family has its own house or hut, built by the family. I was told that the second instalment of the Plan, the next Five Year Plan, was going to tackle the great problem of housing for the workmen, which shows that they themselves feel that so far this has not been done. When questioned on this matter they generally reply: "We know that man is gregarious, and we do not fear agglomeration as you do in Europe."

It is well known that everything on which Russia can rely on at the present time to keep up her export trade has been in existence for some time. There is the oil industry at Baku, which supplied Tsarist Russia with one of her greatest items of export. Another industry which existed on a very large scale in Tsarist days is the iron industry, especially in the Donetz Basin, where there were seven or eight big mining companies connected with smelting works. By means of a regular system of protection Russia, in the years immediately preceding the War, occupied the fourth place in the list of European iron producers and exporters. It cannot be said, therefore, that this industry is of recent creation. I believe the only thing that has been added to that activity is the discovery of a new ironfield in the Magnito mountains, at Magnitogorsk, but these works are as yet only in their infancy. So far as coal mining and iron production are concerned, therefore, the Soviet Union is only carrying on an industry as it existed in Tsarist days. In those days, however, the industries did not belong to the Russians; they were generally developed by foreign capital, especially Belgian, French and British.

As for transportation, not only the railway lines but also the rolling stock still date from the old Tsarist days; I do not think they have added a single car to those that already existed. They have done a certain amount of work in repairing old locomotives, and they have restarted the old factory which existed near Nijni Novgorod for the repair of locomotives; but for transportation they still use the old Tsarist lines and rolling stock.

What they have added is, for instance, the cultivation of cotton and some wild plan for the cultivation of rubber, because they decided to free themselves from the need to import rubber; but in every case they have simply re-started an old industry. The rubber factory to which I referred was an old rubber factory which was flourishing under the Tsarist regime; even the building belonged to that time. Before the War Russia had a large market in the East for rubber snowboots and such like, until American competition made itself felt. If they want to show the visitor a good factory, they generally show you an old one which has been revived and started again. It is absolutely impossible to suppose that a new industry can be created from nothing; *creatio ex nihil* does not happen in actual life. They are merely developing and enlarging what they have found.

It is a pathetic fact that no effort has been spared by the Russian people to answer the call of the Government. The spirit of sacrifice shown by the Russian people surpasses anything I could believe before going to Russia. It is true that I found them discouraged, but their discouragement can be understood, because they had been working for four years and were always being promised prosperity, but were still in a state of semi-starvation; they were still being rationed, and, what is dangerous, they had started to doubt official figures. For the Bolshevists to put the blame for this state of affairs on the people would be sheer calumny, because the Russian people have done all and more than all that was asked of them. It is not from lack of enthusiasm on the part of the people, but from faults in the design and execution of the Plan, that the Plan has so far failed.

The question of how much the Plan owes to foreign experts is very difficult to answer. In its formation it owed nothing to them, but only in its working. Foreign experts always complain that they are called in to give an opinion only after some scheme has been formed, and then they have to correct it and turn it into something which will work efficiently. As for the amount of work which foreign experts are able to get out of Russian workmen, I think this is an invidious question. Russian workmen cannot be judged by present circumstances, because they are underfed, and it is impossible to exact a great amount of work from an underfed workman. One foreign expert, an Englishman, told me that even with foreign workmen the case was the same; for the first two or three months they did two or three times as much work as the Russians, but, after two or three months of underfeeding, their standard of production fell off. It is difficult to judge, therefore, whether with proper food and housing their workmen will be as good as ours. It is a question for the future, and depends above all on food.

THE CHAIRMAN:

I think it is comforting to hear that Soviet Russia is not likely to be a serious competitor in manufactured goods in foreign markets, at any rate for many years to come.

As I spent about nine years in Russia, I can confirm many things the Lecturer has told you from my own experience. For instance, take the breakdown of transport. The breakdown of transport during the War was one of the most potent causes of the first revolution, when bread ran short in the capital—Leningrad, as it is named now. At that time there was an enormous agglomeration of men at the front; 15,000,000 had been mobilized, and feeding them together with an equally enormous number of horses, was an immense problem. In 1917, just before the revolution, Russia had in the field the equivalent of 56 divisions of cavalry, each of 24 squadrons of 150 sabres—more cavalry than all the rest of the combatants in the War put together. Feeding that huge number of horses, as well as all the horses used in the transport services, entailed an immense amount of transportation from the rear; naturally the transport broke down.

The Lecturer very rightly drew attention to the political interference with the technical men who are running the factories. A great deal is heard in this country about "If the politicians would only leave us alone"; yet the Russians have a very much worse time. In Russia those who are trying to provide employment and make industry succeed are obstructed far more than in this country, because we have not yet been so idiotic as to put political directors in the factories.

I was very interested to hear about the overpopulation of the country districts, amongst the peasants. But I do not think that this holds good of Siberia. I was out in Siberia for two years at the end of the War, and it struck me as being very thinly populated; and I do not think they can have overtaken the waste spaces of Siberia yet. Of course, before the War Russia used to send there, on a State emigration plan, some 750,000 people a year, a very large total when compared to the annual emigration from Great Britain, which was about 170,000 a year in pre-War days. But when agriculture is mechanized, as the Lecturer stated, it employs far fewer men; and so the Russians will be faced with the problem of over-population just as we are in this country, because the population of Russia increases at an enormous rate every year, I think at the rate of 3,000,000 or 4,000,000.

THE LECTURER: It is said that the agricultural population increases at the rate of 27 per thousand, but I do not think that this is possible, because in that case the population would increase by 7,000,000 or 8,000,000 a year. I think the increase is at the rate of 4,000,000 or 5,000,000 a year.

THE CHAIRMAN: I believe the increase in population each year in Russia is larger than it is in the whole of Western Europe, a fact which gives cause for thought. I know that in India the population has increased by 100 millions in the last 50 years, and that this constitutes the biggest problem to be dealt with now.

The Lecturer told us some interesting things about the factory at Nijni Novgorod, and we have heard of other factories planted down in the middle of deserts with no water supply which have had to be abandoned. That sort of thing happens when theorists direct a country. Round London things are done differently; so along the Great West Road people establish their factories where they can get good transport by water, rail and road.

The Lecturer referred to the fact that foreign enterprise under the Tsars had done a great deal for Russian industry. That is absolutely true, for example, in the case of oil, because it was British capital which sank a very large number of the wells at Baku and other places in the Caucasus. Only this morning I read of the death of Mr. Leslie Urquhart, a pioneer of industry in Russia. It was he who established mines and factories in the Urals and down towards Turkestan, and his claim against the present Russian Government for wrongfully confiscated properties amounted to £56,000,000. Pioneers like that did great work in Russia in pre-War days.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE RED ARMY

This account of the Red Army of Soviet Russia has been extracted from "Die Welt vor dem Abgrund," compiled by Professor I. Iljin, late of Moscow University. The original is based on numerous Soviet official documents and pronouncements. It is reproduced by permission of the publishers—Eckart-Verlag, of Berlin—who state that the particulars given do not necessarily apply beyond the close of 1931.

THE Soviet theory of war admits the necessity of armaments to the communistic state alone; the bourgeois state has no right to armaments. It is admitted that certain wars have been of value to mankind, just as the Napoleonic wars served the purpose of shaking to their foundations the surviving feudalism and absolutism of the day. In like manner the Communists approve of all civil wars, also of wars waged by a proletarian against a bourgeois state. Moreover, in any war that might occur between two bourgeois states the proletariat is exhorted to convert such a war into a civil war. Consequently the proletariat of any state engaged in an "imperialistic" war must assume a defeatist attitude; on the other hand a patriotic attitude is recommended where the state is a socialistic proletarian organism. It follows that the armament of a proletarian state is both useful and progressive, while that of the bourgeois state is but an instrument of enslavement. The perfect type, therefore, of a proletarian army is the Red Army of the Soviet Union—provided the Union remains governed by the Communist Party.

Communist Strategy.—The strategy of Napoleon was one of destruction; that of Foch was based on attrition; the Soviet strategy relies on "the decomposition" of the enemy forces. This strategy reached its climax in the Russian Civil War of 1919. It failed in the Russo-Polish war of 1920 because the newly constituted Polish state was proof against the incomplete Russian attacks.

To guard against any such renewed failure the Russian Communists have now attempted to organize a system of "parties" or "leagues" in several countries. It is believed that these various bodies, which are controlled by the Congress of the III International ("Komintern") at Moscow, have some definite tasks of a military character to perform in the event of emergency. Such is stated to be the case particularly in Germany and Austria.

The political basis of the Red Army.—In the Regulations issued by the Soviet Government, the Red Army is designated as " the Workers' and Peasants' Red Army " and as the " tool of the only and first fatherland of the labouring classes." So the spirit animating this army is not patriotism in the ordinary sense of the term but class hatred pure and simple : its task, in the last instance, is the overthrow of the capitalist régime in all countries. The education of the Red Army is international in so far as politics are concerned. The Red soldier is taught that his reserves will be found beyond his enemy's battle front, and that the bourgeois armies, in the course of a war, will turn their weapons against " kings, bankers, factory owners, and generals." The Soviet Regulations expect the Red soldier " to win over the labouring classes of a theatre of war to the world revolution." In 1920, in the course of the Polish campaign, the Soviet forces were accompanied by a ready-made " Polish Soviet government," which was to have expedited the union of a sovietized Poland to the Soviet Union. A similar process is envisaged in any future campaign. There thus stands revealed a species of Red imperialism which differs from the Ottoman or Napoleonic ideal only by its communistic complexion. The end is intended to be a Soviet World State governed by the III International.

The history of the Red Army.—The Red Army was created on 28th January, 1918. Originally it consisted of volunteers, remains of the " Red Guards," i.e., armed bands of workers of communistic sympathies. But the volunteer principle was abandoned as soon as the Soviet Union saw itself encircled by enemies, and the recruitment of volunteers proved inadequate ; up to April, 1918, their total was only 106,000. On 8th April, Trotzky undertook the reorganization of the Red Army on the following basis :—

(*a*) Universal service for all workers between the ages of 18 and 40 ;
(*b*) Strong centralization of the army command ;
(*c*) Restoration of a military hierarchy and strict discipline ;
(*d*) Employment of former Imperial officers ;
(*e*) The constitution of a corps of political commissaries to represent the Communist Party in the army.

The commissaries, exclusively Communists, were to spread the Communist doctrine in the army : former Imperial officers were placed under their strict supervision.

This army went through the civil war of 1918-1920, at the end of which it was overhauled and made more serviceable. Finally, in 1923 a system of " Territorial Militia " was introduced. As a result of this measure the divisions of the Red Army which came from the purely

agricultural regions consisted of 90–95% of peasants. But the peasants were even then none too reliable in their devotion to the Communist doctrines. So long as the central Soviet policy was well disposed to the peasants this did not matter much. In 1925, Frunse, Commissary for Defence, increased the Territorial Militia divisions until the latter, in 1926, actually exceeded the number of the regular " cadre " divisions. This preponderance assumed a totally different significance when, in 1927, the Soviet Government adopted its policy against the wealthy farmers or " kulaki." The result was a weakening of the reliability of the " peasant " divisions, a fact which caused much anxiety.

The organization of the command.—The command of the Red Army is so highly centralized that it finally rests in the hands of a single individual; to such an extent does this centralization extend that the " independent " republics such as Ukraine and Transcaucasia, cannot issue any direct orders to the troops forming their contingents. In fact, the Commissary for Defence controls absolutely army, navy and air forces.

The most important branches of his Commissariat are (i) The Revolutionary War Council, (ii) The Political Army Directorate. These organisms are peculiar to the Red Army. The former, consisting of twelve members, exercises the actual command over the Red Army. In 1931, out of its twelve members only two were professional soldiers by education; the remainder had become soldiers during the Civil War in which they had given proof of robust qualities. The Political Army Directorate acts as liaison between the high command on one side and the Communist Party, as well as the Komintern, on the other. It attends to the political education of the army and to the military-political training of the country at large. In time of war it would see to the preparation of the population of a theatre of war.

The remaining organization of the Red Army does not differ in any way from that which is normal in other countries. But there exists no General Staff; this was abolished by Frunse in 1924. It is difficult to understand the grounds for this step. The reason given was that war was as much political and economic as military in its purview; consequently it must be conducted by others as well as soldiers. The logical arrangement would seem to be to train a General Staff in outside subjects.

The Inner Structure of the Red Army.—The right to bear arms is the privilege of the labouring classes. Other classes pay a military tax in lieu of service and are drafted into auxiliary units in time of war. Even these limitations to service do not satisfy the Communist Party; but they will not and cannot abolish the principle of universal service, since this would be a severe blow to the true Leninist doctrine. Yet the fact

remains that in 1931 83% of the Russian population were peasants; and this constitutes a weakness in the Army. Consequently a complicated system of supervision to mitigate such risks was introduced, and this was effected through the following organizations:—

(1) Political Directorates of Defence Districts with political detachments on the headquarters of divisions and even of certain brigades;
(2) Political Secretariats of Territorial districts;
(3) Party Committees with all higher military units inclusive of single brigades;
(4) War Commissaries or Political Assistants at all headquarters from Corps to Companies;
(5) Party "cells" and communistic groups of the League of Youth at the same headquarters;
(6) Political "leaders" in detachments of the Army;
(7) Clubs and "Lenin-Courses";
(8) Special detachments of the O.G.P.U. (with divisions downwards) for instruction and supervision—not to mention political espionage in the army.

This organization needs an extensive personnel. In 1928 there were 82,000 Communists employed on these tasks; in 1929 there were 100,000; in 1930 the number had grown to 129,000. In addition there were (in 1930) 150,000 members of the Communist League of Youth. Well might Woroshilof ask, "Under these conditions could one expect the Red Army to be unreliable? Is it possible that it should ever refuse to do its duty?"

The Communists are particularly numerous in the more important arms and at the various headquarters. In 1930 the recognized members of the Communist Party serving on headquarter staffs numbered 51%. In addition the higher commands of infantry and cavalry are staffed with 97% of men who fought in the Civil War; in the lower commands this figure is still 70%. Of the total officers of the Red Army 10.6% served in the Imperial army and of these the majority now belong to the Communist Party.

A further attempt has been made to increase the number of the urban workers serving in the ranks and to decrease the total of the peasants. This is possible owing to the strength of the annual contingent. Its gross strength is about 1,200,000; of these some 800,000 are classified as fit for service, while only 450,000 are recruited. But this is not sufficient to change the structure of the army; in 1927 there were 23.8% workers to 63.4% peasants in the ranks. In 1930 the proportion had altered to 32.9% workers to 57.9% peasants. The percentage of

proletarians serving on headquarters is 30% ; in the political organization it is 46.7%. In 1929 entries to the military schools consisted of 67.3% proletarians. The structure of the Communist Party's organization in the Red Army had also changed ; in 1928 there were 41% proletarians, 32% peasants, 25% representatives of the classes of government employees ; in 1930 the numbers were 58.3% proletarians, 29% peasants, 12% government employees.

Fixed proportions of workers have to be found for certain arms and formations ; this is fixed at :—

50%	For the fleet, armoured cars, and units of O.G.P.U.
40%	Air forces.
30%	Chemical warfare and signal units.
15%	Artillery.
10%–8% ..	Remaining arms.

But in the Communist Party's military organisms it was proposed to fix the figure at 65%. In 1929 this figure was actually exceeded ; it was as much as 71% in the army, 83% in the fleet. This high figure was doubtless connected with the campaign of collectivization of agriculture. At this moment some political troubles occurred and in the end a " purge " of the Party took place in consequence of which 41% workers were excluded from the Party in the Army, and 65% in the fleet.

It is obvious that the Soviet Government could not regard the Red Army as it stands in the light of a " class " organization. In view of the preponderance of the peasants it has been necessary to create special organs for the maintenance of the dictatorship of the proletariat. These formations are often known as " Troops for special service " or " Troops of the O.G.P.U.," in other words, political police or gendarmerie ; they might be regarded in the same light as the Janissaries or Praetorians of old.[1]

Not only are these men specially selected, but they are specially armed, equipped and fed. They are kept on a mobilization basis, and are so organized as to be formed into detachments of all arms and of any strength. In Moscow the nucleus of these O.G.P.U. troops is kept in the shape of " Dsershinsky's Special Division " and " Stalin's Own Cavalry Brigade." In all greater towns there is a regiment of O.G.P.U. ; in lesser towns there is a detachment. In districts where there is any exceptional manifestation against the government " manœuvre-groups " can be stationed who may have as their duty to take punitive measures against the population.

[1] See Note at the end of this article.

The morale of the Red Army.—The morale of the army must depend on the feelings of the peasants. There is no question but that the government's attitude towards the peasants, more particularly towards the " kulaki," has influenced the morale of the army. Murmurs against the Communist régime have become audible. Several " incidents " occurred in 1929 which betrayed this discontent; moreover it unquestionably spread to the worker elements of the army. The official military papers of that period contain several allusions to this fact. Class warfare had set in to some extent.

During the Soviet-Chinese fighting on the Manchurian frontier the Soviet Government took care to send " Cadre " divisions to that front, and not one Territorial Militia division. This shows the confidence that was felt at the time in the loyalty of the army.

In 1929, moreover, the recruits coming up for service were put through a searching test. The authorities received new and stringent instructions :

(1) The worker and Communist Party's elements in the army were to be strengthened and more evenly divided ;

(2) To dismiss not only all those who would be ineligible to serve, but also all those who—neither being ineligible nor the sons of " kulaki "—owing to their known behaviour might be regarded as carriers of " kulak " influences ;

(3) To abolish selection by ballot and to replace it by class selection.

The latter step is a virtual renunciation of the principle of universal service. There is in fact little doubt that the Red Army is threatened with a gradual division into its component elements.

NOTE.—The O.G.P.U. is the State Political Department " of the Soviet Union. It is responsible for its actions almost entirely to the Political Bureau of the Russian Communist Party, and has virtually become the instrument of government of the head of the Soviet Union ; it acts as a political police and directs all government actions dealing with every species of political crime. The O.G.P.U. is divided into eight branches, one of which is styled the Special Military Section, which is responsible for the fidelity of the Soviet fighting services. The O.G.P.U. troops are known as the " Chon," or C.H.O.N., and stand directly under the orders of the chief assistant of the President of the O.G.P.U. These troops are distinct from the Red Army, and are maintained under a separate budget—118,000,000 roubles for 1932. Recruitment is from approved Communists only, mainly members of the Communist Party and the Communist League of Youth. The term of service is two years ; but can be extended or even become permanent.

The C.H.O.N. numbers over 50,000, and it can be regarded as the pick of the Soviet forces ; it is said to be admirably equipped, maintained and disciplined.

In addition to the C.H.O.N. the O.G.P.U. controls some 10,000 Frontier Guards and 60,000 Escort Guards (employed in prisons, penal camps, etc.). It is estimated that the O.G.P.U. can dispose of over 200,000 men.

A NAVAL OPERATION IN SAMOA
AN EXAMPLE OF IMPERIAL POLICE WORK

By COMMANDER R. E. JEFFREYS, D.S.C., R.N.

IN the early part of 1930, the situation in Apia, the capital of Western Samoa, became so strained that the Administrator felt himself obliged to ask for the assistance of armed forces from the New Zealand Government. The only force immediately available and under the control of that Government was H.M.S. " Dunedin," the one cruiser of the New Zealand Division of the Royal Navy then in New Zealand waters. She was accordingly dispatched as quickly as possible from Auckland, and during her absence of ten weeks helped very materially to achieve the pacification of the island which was actually accomplished in eight weeks of strenuous and unending effort.

That so much should have been done in such a short time and that the results obtained should have already lasted three years must indicate that the policy adopted was sound. Therefore, a brief account of the operations, the events leading up to them, and the final liquidation of the trouble may be of interest.

THE SCENE AND NATURE OF THE TROUBLE.

Upolu is the second largest of the group of islands in the South Pacific called the Western Samoan or Navigator Islands, and lies some 1,500 miles N.E. of New Zealand, the mandatory country. The island is extremely mountainous and broken, being about thirty-five miles long by twelve miles broad at its greatest breadth and rising to a height of some 4,000 feet along its central ridge. Except for a cultivated strip varying from one to three miles in width all round the coast and one or two fairly open and cultivated valleys running up into the hills, it is mostly steep ground, covered with almost impenetrable tropical vegetation and everywhere intersected by precipitous ravines. There are no roads except in the vicinity of Apia, the seat of the Administration, and a road along the North coast, running East and West from Apia for about ten miles in each direction. There are four main tracks across the island practicable for pack animals, but apart from these, the only communication between villages on the South side with Apia on the North, is by sea or by walking round the coast. The population is almost all Samoan, but most of the trading is carried on by half-castes of various mixtures.

During the War, the latter quite naturally took full advantage of the comparative freedom that they enjoyed from Government restrictions, and made very considerable profits out of the natives, thanks to the high prices they obtained for all raw materials, the chief of which was copra. Equally naturally, perhaps, they resented subsequent Government interference which reduced these profits by law. Thus the majority of the half-caste traders were anti-Government or anti-New Zealand. They found a fruitful soil to work on in the shape of the Samoan, surely one of the most easily misled people in the world. There seems to be little doubt that the Samoan himself was dissatisfied and suspicious of New Zealand, and this was due to a variety of causes. But it was the conjunction of these two dissatisfied elements that produced the Mau, or Society, whose slogan was "Samoa for the Samoans" and whose main object was to sever their connection with New Zealand. Two-thirds of the total population eventually belonged to this Society and subscribed to its funds which were sufficiently large to permit of a newspaper being published in New Zealand for some years, though its circulation was negligible, and to enable their half-caste leader to plead their cause at Geneva. The remaining third of the natives, while ostensibly loyal, were, with the exception of a very few courageous and strong-minded chiefs, so intimidated by the Mau that they were of no assistance whatever to the Administration.

There is an authentic story which illustrates the childish receptivity of the average Samoan mind. A certain unscrupulous trader, thinking to improve his sales, informed a Samoan that the seaplane which had been brought by the warship was going to drop gas bombs on the villages implicated in the Mau. He, however, had a sure and certain safeguard against this in the form of soap which, if bitten and made into a lather in the mouth, would protect them from being gassed. This enterprising person was sold out of soap in two days.

The Mau having been formed, got gradually more and more out of hand, aided by the usual vacillation of the authorities, who were reluctant, or unable, to follow out any definite policy in dealing with them. Eventually they got so out of hand that the police, all ex-soldiers and a stout-hearted company, could not show themselves outside Apia without the risk of being stoned. Civil criminals were sheltered by the Mau who, on more than one occasion, successfully used force to protect a wanted man from the police sent to arrest him. By the end of 1929, the Mau had even been bold enough to establish a traffic control post only two miles from Apia and cars could only pass by their leave. To all intents and purposes, the law was non-existent and the Government was becoming financially embarrassed owing to the non-payment of taxes.

Affairs were brought to a head after Christmas, 1929, when the Mau, in spite of an officially issued warning, decided that a procession they were to hold in Apia should include in its ranks men wanted by the authorities for criminal offences. The police made all arrangements to arrest certain of these men if seen and prepared for all eventualities in case of resistance. Resistance there was and the police were assaulted and driven back to their headquarters, one unfortunate man being cut off and beaten to death. Fire was opened on the rioters from the police station and a number of casualties suffered by them, including one of their principal hereditary chiefs who died of wounds; but the arrests were not effected and the mob quickly dispersed, breathing threats and defiance. However they had had a sharp lesson and did not attempt violence again.

This then, very briefly, was the situation when the New Zealand Government decided to suppress the Mau altogether as a subversive and revolutionary element. H.M.S. "Dunedin" was ordered to proceed forthwith to Samoa to assist the Administrator in restoring order and normal conditions by all means in his power. At the same time, steps were taken to enrol and train a company of special constabulary to relieve the naval forces later on, but this—perhaps fortunately—was never required.

Preparations.

Although both New Zealand cruisers had been sent to Samoa some years previously, they had been restricted on that occasion to making a demonstration of force, and had not been allowed to carry out any form of organized campaign on shore. We, therefore, had very little to guide us from previous records, and could only make such preparations before leaving Auckland as seemed to be advisable from what we knew of the situation and the exercise of our own imaginations. Hurried demands were made on the military authorities for all the paraphernalia associated with armed parties when landed for business instead of ceremony—shrapnel helmets, ground sheets, camp utensils, extra medical stores, etc., etc., but easily the most imposing accessory was a seaplane with its crew, consisting of a Flight Lieutenant and two aircraftsmen of the New Zealand Air Force. The old platform and derrick designed for carrying and hoisting in and out aircraft had been removed a few months earlier on the grounds that its absence would be preferable to its weight and bulk, as aircraft were no longer carried in this class of cruiser. There was an ironical touch in our having to make a special stowage for a seaplane so soon afterwards at a great expense of time and labour, but as events turned out, this trouble was repaid many times over.

The ship sailed as soon as all the stores could be embarked and, during the four days passage, the organization of the landing parties was perfected and the men drilled daily. As it appeared possible from our information that we might be sniped at or even be in for a pitched battle, it was decided to make the shrapnel helmets our everyday headgear on shore and the landing parties wore them daily for drill for progressively increasing periods so as to get used to them. This procedure was so successful that in a very short time they were preferred to anything else, and were the only kind of helmet that could withstand even one day's march in tropical rain or through wet jungle. There was, however, a more important reason for wearing "tin hats." It was to be our guiding policy that, so far as it was possible, all bloodshed was to be avoided. This necessitated the issue of very definite orders that fire was not to be opened except in self defence and in the last resort, and the adoption of such measures as were practicable to deter the Samoans from any temptation to attack us. We thought that the moral effect of seeing our parties ashore fully armed, with bulging ammunition pouches and shrapnel helmets, and all officers with revolvers in large and conspicuous holsters would be considerable, and I believe we were right. At all events, we attained our object of waging a bloodless war, except for two incidents, one of them a pure accident and the other beyond our control. For the same reason, instructions were issued that the troops were never to move about in parties of less than three or four when outside Apia itself or out of earshot of their own camp, and officers were to be accompanied by an armed orderly.

It was not possible to lay down any plan of campaign previous to arrival as our orders were simply to place ourselves at the disposal of H.E. The Administrator, and until we had met him and heard what he wanted, we knew very little except that an armed party was required to land as quickly as possible and that some arrangements for accommodation on shore were being made. No. 1 Platoon, composed of the Royal Marines, was warned off for this, and No. 2 Platoon (Seamen) was to stand by to follow immediately. No. 3 Platoon (also Seamen) was to remain on board as reserve for the time being.

The Operations.

For the purposes of this account, the actual operations can best be divided into three phases.

The first was, naturally, the establishment and organization of the forces ashore. The second was the prolonged and tedious phase which, for lack of a better term, may be called the harassing stage. The third was the concluding phase after the Mau had decided to come in and talk,

which involved the final liquidation of the movement and the return of the natives, aided by a little coercion, to their own villages.

The First Phase.—Immediately on landing, a call was made on the Administrator and a short conference with all the Heads of Departments took place from which we gathered that our opponents had already vanished into the bush, convinced that after a few days the warship would depart having accomplished nothing, and that they would then be able to continue to enjoy life and flout authority. His Excellency was anxious that the Mau centre, a village called Vaimoso, only two miles from Apia, should be raided on the following day and their office dismantled. He suggested that a force should be kept in Apia and another be sent out to a large village some six or seven miles to the westward, there to establish a camp and so, to some extent, control the North coast, West of Apia, which is the most densely populated part of the island. No. 2 Platoon was therefore landed for duty in Apia and the Marines went out to the advanced post. Arrangements had already been made for a house on the front to be used as headquarters, whence communication with the ship would be easy, and for a large unoccupied house standing in its own grounds about half a mile inland to be used as a barrack for the force in Apia.

The Marines took over three " fales," or native huts, on arrival at their village—Leauva'a—and these were found to be most suitable. The question of transport was also readily solved as a sufficiency of lorries proved to be available, and cars were borrowed or taxis commandeered when required. Supplies were organized daily from the ship, and could be easily added to, as desired, from the local stores in Apia. Water presented no difficulties as most villages had it laid on.

The Mau stronghold, Vaimoso, was duly swept out on the second day, and the office, an erection like a bandstand in the middle of the compound, dismantled and closed. The tangible results of this effort were nil except for a trophy or two which found their way to headquarters, and masses of old papers of no value. But, no doubt, it gave some satisfaction to the police who had for so long borne the brunt of an unequal struggle.

While the work of organization was going on, headquarters was also busy assimilating information and trying to get some idea of what we were in for and how best to tackle the job. Here, the advice of His Excellency himself was our main help, and he was seldom, if ever, at fault in his judgment, though perhaps we did not always fully appreciate this at first.

The main factors in the situation were :—

(1) The disaffected natives having gone into the bush, it was most unlikely we would be able to catch them. Their location was uncertain but was believed to be the hills and bush inland and to the westward.

(2) Their supplies and creature comforts would mostly reach them from the coast villages nearest to their retreats.

(3) No help was to be expected from the loyal natives.

(4) Outside encouragement to the Mau in the form of propaganda from New Zealand, disseminated through half-caste agents. It was unlikely that this could be stopped.

(5) The innate dislike of the Samoan for hardship and discomfort.

In view of (1) and (3), direct pressure was obviously impracticable, at any rate to begin with. Strong measures, such as burning down villages or huts of natives known to be actively supporting the Mau, destroying their fautassis (canoes), etc., were also ruled out by His Excellency as likely to prejudice an ultimate friendly settlement. Hence the only effective course remaining to us, and the one which was adopted was a policy of indirect pressure, whereby we hoped so to harass and impress the recalcitrants, that they would before long lose heart and decide that the game was not worth the candle.

The methods employed were varied but can be grouped under three main heads. First—bush sweeps. These were carried out by day with the intention of keeping the Mau on the move, locating and destroying their bush shelters, interfering with their supplies from the villages, and occasionally, with luck, surprising a party and making a few captures. Secondly, village raids, which were always carried out at night and were designed to produce the maximum possible inconvenience to the inhabitants if these were known to be harbouring wanted men or actively assisting the Mau. Thirdly, control of traffic on the roads. This was only exercised gradually and with increasing severity, and was designed to interrupt as far as possible communication between the leaders in the bush and their sympathisers in Apia.

We hoped that the effects of these measures, if pursued with obvious determination and energy, would be to re-assure the loyal natives and bring them off the fence on our side. Once this was accomplished, we knew that our operations would be far simpler as it would largely solve the great difficulty of getting any information at all concerning the movements of the other side. Actually, we were in the sixth week of our " campaign " before this goal was reached and we received any really whole-hearted offers of assistance. This was rather longer than

I personally had expected, but the offer, when it came, surprised us all with its completeness and enthusiasm. It is probable that the threat of the resulting operations, although these had never actually to be put into practice, played a decisive part in the collapse of the Mau movement.

The first stage of the operations may be said to have been completed on the third day, with the establishment of No. 3 Platoon (second Seamen) on shore in Apia, the movement of No. 1 Platoon to the extremity of the West coast road at Mulifanua, and No. 2 Platoon to the camp at Leauva'a vacated by No. 1. Besides this, the seaplane was ready to operate from a selected beach on the West side of Apia bay and made her initial flight early the next morning.

The Second Phase.—The policy of indirect pressure, or the second stage, began immediately and was continued without intermission for about six weeks. It would be quite impossible to describe the operations in detail here and only a brief outline will be attempted except for a slightly fuller account of one or two more elaborate efforts.

The dispositions described above were taken with a view to concentrating our attention on the bush-covered slopes inland from the coast road running West from Apia. After a week of daily marches and sweeps, and nightly visitations to the principal villages, it became apparent that our quarry had either dispersed into small parties or else moved over *en bloc* to the southern side of the main ridge and comparative peace. Rumours came in by devious ways that a large number were camping along a peninsular formed by a lagoon running in from the sea, and it was determined to make an effort to round them up by an amphibious operation. One day had to be given to making the necessary preparations and, before the subsequent dawn, No. 2 Platoon with stores embarked by tug to effect a landing on the opposite side of the island, about ten miles march East of the heel of the peninsula, while No. 3 Platoon, leaving their camp as soon as it was daylight, marched across the island from Apia and descended on the lagoon. The movements were timed for the two forces to rendezvous on the lagoon about 4 p.m. There is no doubt, however, that our intentions leaked out, and the 24 hours delay required to prepare the movement enabled our friends to get clear. The tug party were told on landing that the Mau had passed through the village going East that morning. The information, however, was vague and uncertain and in any case, junction had to be made with the overland party whose stores were all in the tug. These were therefore landed that night, and No. 3 Platoon told to establish themselves and exercise indirect pressure as necessary in the area, while No. 2 Platoon re-embarked and landed the following morning some 20 miles to the eastward, only to learn that the chase had again just

passed through and turned North to cross the island by the easternmost of the four overland tracks. Leaving one section behind to guard stores, the remainder of the platoon followed early next day,and after an all-day march descended at dusk on the villages on the North-East coast to an accompaniment of native horns and drums, which gave an effective alarm. One Mau leader, old and too tired to run, was found and taken back to Apia later, but no other tangible result had been obtained from these three days somewhat strenuous efforts. No. 2 Platoon therefore returned to Apia three days later, leaving No. 3 Seaman Platoon isolated on the opposite side of the island. Supplies to this party were effected every two days by sea, but communications were a difficulty that was only solved by the seaplane until the ship had been able to design and produce suitable low-power self-contained wireless sets in sufficient numbers. With half the wireless staff ashore this was no easy matter and took time, but it was done and the results were invaluable.

With these and similar endeavours the days passed by quickly, and all eyes were anxiously looking for any signs, however small, that some effect was being obtained. We knew that we could not continue the pace we had set for more than two months. After that it would be necessary to rest the men and recuperate, and we deliberately gambled on the natives giving it up within that time. They were, of course, receiving encouragement from New Zealand, and had probably been deluded by promises of all kinds of assistance by the next monthly mail, which was due to arrive in the fourth week of the operations. As nothing could be done to prevent propaganda coming into the island, means had to be devised to counteract it. This was done by leaflets printed in the vernacular and distributed to the villages by seaplane. The Administrator's proclamations to the Mau and ordinances were also distributed in the same way. After the third week traffic posts were established on the roads out of Apia. Probably these were of some value in hindering the conveyance of information and supplies out of Apia to the Mau, but their principal justification lay in the moral effect produced by such obvious evidence of our control of the situation. At the same time, our raids and sweeps had now extended to the eastward of Apia, and No. 3 Platoon was also recalled from the South coast, where their presence had apparently effected all that could be expected for the time being. This platoon settled in at Mulifanua ; the Marines returned to their original camp at Leauva'a, and No. 2 Platoon to Apia.

As indications pointed to the principal Mau leaders being in hiding in the bush three or four miles inland from Apia, a series of operations were carried out during the fifth and sixth week to try and locate them. Needless to say, this was not accomplished, and the only capture was a

small " suitcase " belonging to the Mau leader himself, which had obviously been rather hurriedly dropped in a clearing. We learnt subsequently that our parties had been seen and watched, although never seeing anything themselves. It was in the fifth week that the first really hopeful sign was given. Word was received that a party of Mau were waiting to the East of Apia, hoping to be caught. No. 2 Platoon Commander took a section out and duly " captured " them, and a second similar party on his way home. They were obviously tired of the show but, like the Chinese, did not want to lose face by walking in and saying so. Soon afterwards No. 3 Platoon made a considerable capture in a village raid.

Towards the end of the sixth week No. 3 Platoon returned to the South-West coast as information had been received of large bodies of the Mau again collecting there. They managed to effect a surprise night raid on a village soon afterwards which resulted in a considerable haul of prisoners. In doing so they had been obliged to move by sea, and missing the channel through the reef in the dark had actually bumped on it and, jumping out, hauled their boat over into the lagoon! Fortunately, there was not a heavy surf at the time. The next day they made a further but different sort of haul, luckily surrounding a body of Mau. The second casualty occurred on this occasion, a native being accidentally shot when being chased through his pursuer falling and discharging his revolver unintentionally. A regrettable incident and the only casualty for which the Navy was responsible. One other casualty had occurred earlier in the proceedings when a young Samoan was shot by one of the police while in the act of throwing stones. This sounds rather drastic, but the Samoan is a deadly stone-thrower, quite capable of killing a man with a direct hit on the head.

It was at the same time that No. 3 Platoon was having these successes, that the most significant incident occurred since the operations began. The Administrator held a " fono " (conference) with the principal loyal chiefs to ask them for their co-operation in our efforts to suppress the Mau. This was given without further question, and the only criticism raised was that we were not being sufficiently stern and must allow them to help in rounding up the wanted men. The offer was accepted, and at a second " fono " on the following day a plan was arranged to sweep out the western half of the island with a number of small self-contained columns, to each of which two or three loyal chiefs, with fifty or sixty followers, would be attached in the capacities of scouts, trackers, porters, etc. We now knew that the waverers were on our side, and convinced of our ultimate success. Things immediately took on a very different and more cheerful appearance. The grand

sweep, however, never came off. With such a large number of Samoans taking part there was, of course, no question of secrecy, and reports of the readiness of the Mau to come in and discuss terms began to be received within forty-eight hours of the decision to allow the loyal Samoans to assist in active operations. The sweep was at first postponed for two days, greatly to the chagrin of our new friends, who were undoubtedly looking forward to obtaining some satisfaction in return for the intimidation and extortions they had suffered at the hands of the Mau in the past few years. Shortly after this postponement had been ordered, definite assurances were received by His Excellency that the Mau would come in forthwith to discuss a settlement. The second phase of our operations was over.

The Third Phase.—The final stage of our little campaign lasted rather more than a fortnight and was, perhaps, the most interesting part of it. One met and talked with those leaders who had hitherto, except for their names, existed for us only in our imaginations nourished by hearsay. One also learnt the true meaning of patience when dealing with a native race to whom time was of no importance but loquacity and oratory second nature. Although all active operations were stopped at the beginning of the seventh week in order to allow the Mau to come in quietly, a further six days had elapsed before all the leaders had arrived, and the first "fono" or, as we should call it, "plenary conference," took place. The pause was extremely welcome for the troops, a large number of whom were, by this time, suffering from insect bites, cuts and scratches which would not heal in that climate without rest and regular treatment.

The first day's conference, on a Monday, was comparatively short, as the Mau leader asked for time to discuss the points laid down by the Administrator, the principal of which were:—

(*a*) The Mau to be disbanded.

(*b*) All men sheltering with the Mau and "wanted" for civil offences to be handed over.

(*c*) All Mau supporters to disperse to their own villages.

The next day, only the two leaders turned up to meet His Excellency, and they had nothing to say except that their discussions were not over and they could not give answers to his points. They were then given till 10 a.m. the next day, Wednesday, when we had our second full meeting. This was not very promising as the break-up of the Mau was refused at first, and only after a lengthy discussion did the leaders agree to reconsider this requirement. After lunch, although still struggling to evade the question of dissolution, His Excellency extracted assurances that the wanted men would surrender and that all the natives would

disperse to their villages. During the negotiations about 2,000 Mau supporters over and above the normal population had come in with their leaders. The proceedings ended with an outburst of fireworks from an octogenarian chief of strong Mau sympathies, but too old for bush living. Incidentally, soon after this he had to be shut up on account of his unceasing incitement of the Samoans to continue their struggle.

As the truce had been declared till Friday there was nothing to be done except to await developments. These took the form of a request from the leaders for another "fono" to take place on that day and for permission for certain "wanted" men to attend. His Excellency granted this, and as a consequence an extension of the truce for twenty-four hours also. At this "fono" the Mau leaders were distinctly truculent and handed in a document containing sixteen points for His Excellency to consider—shades of President Wilson! The Administrator's reply was brief but unequivocal, and the proceedings were closed with the demand that the wanted men were to give themselves up by 2.0 p.m. that afternoon. Strange as it may seem, at 1.45 p.m. all except one chief came in to Police Headquarters. We had gained one point!

From information received, it seemed that the Mau were beginning to disperse, and His Excellency rightly judging the verbal refusals to be mostly bluff, decided to hasten events by a little coercion as soon as the truce lapsed on Saturday morning. Meanwhile No. 3 Platoon had returned to Apia from the South coast, so we were ready for all eventualities. Accordingly two platoons went out to Vaimoso village the next morning with orders to picket it, and with the help of the police started the work of ejecting natives who did not belong there. There were also a certain number of chiefs who were to be detained for various reasons such as non-payment of tax, but who were not on the criminal charge list. At the same time a ban was issued against the wearing of the Mau badge.

Soon after arrival a "fono" was seen to be going on in one "fale," and a party were sent to remove from it some fifteen chiefs who were either wanted or should have gone home. This produced a climax. A whistle blew. There was a burst of shouting and some 800 to 1,000 Samoans rushed out of the remaining fales and surrounded us, jabbering and gesticulating excitedly. It was eventually discovered that they were all insisting on going to gaol too, if their leaders were taken. Whether their idea was that they would be marched to gaol through Apia and make an imposing demonstration, or that their numbers would be difficult to deal with, is not clear, but if so they must have been disappointed. Matters being so nearly concluded and the mob excited, it was thought

preferable to march the whole lot to the prison where they could be quietly sorted out, rather than use intimidation and endeavour to single out there and then those that were wanted from the crowd. This was done, and the gaol reached by a back road. The rest was easy. The police collected the men they wanted, supported by our Marine and Seaman platoons, and to make sure none were missed, the remainder were passed out of the gaol one at a time and encouraged not to loiter in the vicinity by more armed sailors stationed outside. After this the Mau were virtually without leaders, and, although dispersal took another two days and was assisted by sea and land transport, not to mention armed parties, no further resistance was offered.

Conclusion.

The beginning of the ninth week saw the final removal of these misguided people, and the work of re-embarking stores, etc., was commenced at once. At the request of the Administrator, the Marine platoon were to remain behind until the next mail steamer arrived in about a fortnight's time. They were an insurance against any recrudescence of the movement, and by their presence kept things quiet until any bad feeling that might have been engendered during the operations had had time to evaporate. Things remained quiet, however, and have continued to do so in spite of a last effort on the part of the women, who started a Women's Mau. This was a complete fiasco, as even their own menfolk treated it as a joke or else ignored it.

Everything was embarked and the ship ready to sail again in forty-eight hours, but it was unfortunate that in the process the seaplane was damaged through the drawing of a hoisting bolt in the carriage just as it was being got on board! It had been invaluable and was never sick or sorry during the whole period ashore.

I think everyone was glad when the time came to leave. Those who had been on shore felt that they had played at being soldiers long enough, while those left to look after the ship had had none of the interest and practically no distractions to help pass the time. The humid climate was also trying. It must be remembered that this was the hurricane season, and although hurricanes are extremely rare in Samoa, the anchorage was so exposed to the northward that, even with a moderate wind from that quarter, an unpleasant swell was experienced. With half the total ship's company on shore, and more than half the seamen, the slightest irregularity of the barometer was a matter for anxiety.

The sick list at one time reached the alarming figure of 12 officers and over 120 men, more than 25 per cent. of the whole ship's company,

but the vast majority of these were due to bites and cuts which had gone septic and refused to heal in that climate until the patient was able to lie up completely and rest. Until the business was over this was not possible, except for the few more serious cases.

The operations were, however, instructive for everyone, especially those on shore, and a useful variant to the rather hum-drum routine of a small cruiser on a foreign station. It was a particularly good experience for the platoon commanders, who were often completely isolated and to whom all details of operations were left as far as possible, the orders being issued from Headquarters usually in the form of "directions." For six weeks they and their men had had no respite and often lived under very bad conditions; but they managed to stay the course, and by doing so undoubtedly played a major part in the lasting settlement that was eventually reached.

This is not the place to remark on the lessons learnt or to moralize on the many things that might have been done, or done differently. Enough to say that everything of interest, from the fact that ordinary gymnastic shoes proved to be easily the most suitable and economical footwear to the best method of stowing a seaplane in a "D" class cruiser without a fitted platform, was embodied in a report and left on record, so that when the occasion arises again, as it well may, our successors will at least have the benefit of our experiences and not have to build up again from nothing.

THE REFORMATION OF INFANTRY

By Brigadier-General H. Rowan-Robinson, C.M.G., D.S.O.

QUITE a number of articles on the subject of Infantry Reorganization have appeared lately in the Journal.[1] They are full of interest but lacking in indications as to the role the foot soldier is to play in this mechanical age and how he is to be organized for it. The writers concentrated almost entirely on existing conditions and on attempts to improve the Cardwell system to meet those conditions. They missed hearing the busman who complained of a company of Guards: "They ought to get rid of them blinking soldiers. They are more trouble in traffic than 'osses, and they're bad enough." The busman is not alone in believing a soldier on foot to be an anachronism and a brake on the wheel of progress. Drastic change is, indeed, needed before the infantryman can pull his full weight.

This matter is at the moment a subject for discussion and experiment all the world over. With continental nations the changes are mild. They are not motorizing or mechanizing their infantry, partly because they are still obsessed with a belief in older forms of warfare and partly because they are absorbed in mechanizing their mobile forces as a powerful auxiliary to their infantry. They feel no doubt, too, that all civilian lorries will be required for supply work on mobilization and that the maintenance of special lorries for infantry in peace would be a financial impossibility. They will, no doubt, use their motor resources for man-transport in war. But that is a matter which, to be effective, requires careful organization of which there is at present no sign. Generally speaking, platoons of light weapons form the basis of the battalion-organization and behind them are supporting groups of heavier metal—guns, heavy machine-guns and mortars. The French platoon comprises three squads each containing a light machine-section manned by a sergeant and eleven men. Only five rifles are carried and all work is centred round the machine-guns, rifles being used only when the latter are out of action. The German platoon also comprises three squads, but each is divided into a light machine-gun section of four men and a

[1] "Infantry Reorganization." By Major R. F. W. Ashworth—May, 1932, p. 364; By "A Regimental Officer"—August, 1932, p. 559; By "An Ex-Regimental Officer"—November, 1932, p. 790; and (a 'Reply') By Major Ashworth—February, 1933, p. 81.

rifle section of about eight men. The French plan is simple and control is easy; for the squads advance by bounds as superiority of fire is obtained and no attempt is made at stratagem. The German plan is more complicated and trusts to manœuvre more than does the French plan. The light machine-gun section forms the spearhead of attack, followed by the rifle section in column of file till assaulting distance is reached. Then the supporting fire lifts, and the light machine-guns drop into action to cover the advance of the rifle sections. Both these plans appear to be based on two principles:—

(i) Ground must be conquered by supporting fire before forward infantry can occupy it;

(ii) The latter must have a high defensive power to ensure that ground won is maintained.

Experience in the Great War and recent research apparently lead the continental expert to believe that the substitution of strong fire-support within the unit for a part of the fire-support afforded outside the unit will restore to unarmoured human bodies the power of offence against machine guns.

The British and Americans train the bulk of their infantry on lines similar to those mentioned above; but, though we have both abandoned our independent mechanized brigades, we have travelled too far in theory and practice along the path of mechanization to forsake our new faith entirely.

In America, we read,[1] there are two schools of thought, of which the more reactionary holds that there is no power plant in sight that can compete in all terrain, weather, times and seasons and under resistance from the enemy, with the human being in his hobnailed boots. This school would use motors for supply but believes rate of movement will be dictated by fighting foot-soldiers, not by the speed of rear elements. Progressive opinion favours transport up to the battlefield in capacious, armoured but non-fighting vehicles.

One view of the British case is clearly presented by Captain Liddell Hart in "The Future of Infantry."[2] His book is such a thorough guide to the study of the subject that it is possible to cover the whole field in a running commentary upon it. The author first seeks inspiration from history. He finds that victory was often won by superior mobility and flexibility; that generally, but not always, infantry formed the pivot round which mobile forces manœuvred successfully; and that light

[1] "Motors and Infantry," *Infantry Journal*, Jan.–Feb., 1933.

[2] "The Future of Infantry" by Liddell Hart (Faber and Faber) 2s. 6d.

infantry often rendered conspicuous service. It is difficult, however, to deduce much of value from this study as it is also shown that infantry were discarded for centuries and the Mongols won their decisive victories without them. Nor is it needful to delve so deeply to discover that a lightly clad soldier is more mobile than one more heavily weighted, nor that discipline will give steadiness, training skill and organization flexibility. History, especially ancient history, can, like statistics, prove anything and should be treated with considerable caution. By different interpretations one might read leadership or weapons as the principal factors in decisions. What is needed is less the survey of a distant past than a continual study of modern science and a close analysis of recent experience, both in war and peace. This would furnish a suitable starting-point for advance by the process of trial and error.[1]

The first lesson deduced by Captain Liddell Hart is that "shock" is dead. But is this correct? The lance and bayonet may be moribund; yet the tank certainly derives some of its power from a dislike inherent in the bravest of men of being pancaked. Then he finds that there are only two methods by which infantry can advance—namely, with armour protection or by infiltration. Certainly: either the mantle of steel or that of invisibility must be donned if modern fire is to be faced successfully without overwhelming support. But we might well be rid of such catchwords as "infiltration," "soft spot tactics," and "expanding torrents," which tend to the impression that battles may be won without fighting: an impression not necessarily false but one that it is undesirable to leave on the soldier. The latter may find "hard spots" too early and too easily, and leave the search for "soft spots" to his comrades. Moreover, in considering such forms of action, weight must be given to the additional defensive power conferred by the increase in light machine guns as well as to the difficulty of affording fire support to scattered detachments. Actually all these expressions are included in the much simpler term "battle-craft," which is well described by Liddell Hart himself and, in the last issue of the JOURNAL, by Brigadier Wavell. It is an art that continually changes under the impetus of new weapons. Its sphere of study and application lies mainly in platoon and company training when, under the fatherly eye of the battalion commander, the officer learns leadership, and the man confidence in his weapons, skill in their use, and cunning in manœuvre. The will to advance and to help comrades forward, the use of flanking fire, all coupled with good direction, will win the day if victory is in any way possible. Much of

[1] Captain Liddell Hart apparently realizes this, for he draws all his lessons from the study of the Great War and of modern conditions.

this is implicit in the teaching of the book but it needs saying in plainer language.

The insistence by the author on the early forward movement of headquarters and reserves to support successful sub-units is sound, but not the *automatic* use of a part of the reserve. The commander is the only person who can judge the correct time and place for the employment of the reserve. It is almost the only weapon by which he can " teach the doubtful battle how to rage " and he must, therefore, know exactly where it is and in what strength. We are told elsewhere that infantry must " fix " the enemy, and that there are two methods of doing so, by " holding " or by " disorganizing." But is it so necessary to hold, under modern conditions, that we need a special arm for it, and cannot the " disorganizing " be effected much better by the tank ?

It is a seeming absurdity that our drill should be based on battle tactics of Crimean days. But it is extraordinarily difficult within the space allowed by the barrack square to find a satisfactory substitute. Nor is it by any means certain that the old close-order drill is valueless. In the Russo-Japanese war, as the demands of the field armies grew and the time for the training of the young soldier had to be curtailed, the Japanese concentrated on short field courses. The commanders at the front, however, complained bitterly thereat. " Give the men a good dose of the barrack square," they said, " and we shall be content. Our troops must be soldiers before they can be riflemen or skirmishers or signallers." Ceremonial is indeed not an essential, but it plays a fine and inspiring part in the make-up of a soldier, who will die willingly to win the survival of ancient ritual. The Germans and Americans are indeed experimenting mildly with new forms such as lines three deep and columns of three, and the advance of education has enabled us to reduce the time allotted to drill, but it is neither likely nor desirable that we shall see any marked changes in this connexion. On the other hand, we may agree cordially with recent writers that the soldier should be taught the elements of his field work as well as his drill from the day of enlistment.

The question of weapons for the forward infantry naturally enters into the discussion. Shall we have a light rifle, a self-loader or an automatic ? Captain Liddell Hart is strongly in favour of one weapon only—a light rifle of small bore and without a bayonet. Such an armament would render the soldier more mobile, eases the supply of ammunition and enables full use to be made of ground by the skilled skirmisher. It offers, in fact, the best prospect of that invisibility which is the alternative to armour. Its principal defect lies in a lack of fire-power

for defensive purposes, for the retention of captured ground and for repelling counter attacks, but in no scheme of things can there ever be perfection. With the self-loader and the automatic, the heavier weapon and the larger crew furnish relatively more conspicuous targets, and the higher rate of fire makes greater demands on ammunition. Whatever weapon is selected, it is important that it shall be man-carried and that no animals shall be needed.

There is universal agreement that close-support weapons, whether guns, heavy machine guns or mortars, though grouped apart from the rifle companies, should form part of the battalion and/or of the regiment. There are obvious benefits to be gained from this arrangement, but it has its drawbacks, as special support within the unit is not normally needed for certain forms of infantry action ; assistance to police ; various types of work in mountainous country ; the operations of mechanized brigades. The formation of rifle battalions, burdened with no animals and with nothing heavier than the man-borne machine gun, may therefore be worth considering.

In our army we propose, apparently, to transport the heavy machine guns of the unit in mechanized carriers, and Captain Liddell Hart supports this view. There is something to be said, of course, for it, but there are two objections, one of which he notes. The advance of the battalion naturally draws attention. When the hostile fire reaches a volume sufficient to bring the riflemen to a halt, the machine guns advance in support. The expensive carriers then offer a target which the enemy is expecting. Some of them may decide to drop their machine guns and depart, but even so the position of the latter will be clearly exposed and they will probably be crushed. The other objection which will hold till battalions are completely mechanized is the serious one of having two rates of movement within one unit.

But little mention is made in the book of protection against tanks. In this there are two aspects to be considered—protection on the move and protection at the halt. The former can only be furnished by some kind of tank, which fact is an argument for the replacement of the motorized infantry unit by the tank unit. Static protection demands that infantry in garrison in the bases and on the lines of communication shall be equipped with a large number of relatively immobile A.T. weapons for defence against attacks by mechanized forces—their most likely ground enemies. Garrison infantry might be provided by battalions of the Territorial Force specially organized and trained for this purpose. They would, of course, have to move quickly to the seat of war but for sedentary duties only.

The final conclusions reached by Captain Liddell Hart are embodied in a suggested organization of a "new model" infantry battalion—a wholly motorized unit consisting, roughly, of :—

(*a*) Headquarter wing ;
(*b*) Support company containing light machine guns and mortars in armoured carriers ;
(*c*) Light car skirmishing company ;
(*d*) Reserve rifle company carried in 'buses.

The transport to comprise 48 light cars, 27 motor cycles, 42 armoured carriers and 17 lorries.

This is rather a complicated organization. Practically speaking, it is a mounted infantry battalion, machines taking the place of the old ponies. Strategically, there is a value in it, but not tactically. The infantry may be transported long distances most usefully ; but, on debussment, they will still have to face the machine gun without protection. A hankering after infantry work in a mechanized environment is difficult to follow. It has been shown that the world dispensed with infantry *qua* infantry for centuries. It can do so again if they lack a role. For the cost of this motorized battalion we might have a small unit of armoured fighting vehicles that could fight over the same terrain with more effect. There is, indeed, a suggestion that the ultimate solution might be to mount the foremost infantry in small tracked armoured vehicles. But it would seem better if the vehicles were either small fighters or large carriers.

If the infantry had to fulfil one task only—say that of the accompaniment of mechanized forces—their reformation would be comparatively simple. They are, however, faced with a number of tasks and cannot be expected without an inconvenient variety of organizations to execute them all equally well. It may be possible, however, to find some useful common denominator. With infantry in its present form and supported by an exiguous artillery, our army would be quickly brought to a halt, and stalemate might ensue with all its ancient horrors. An increase in the amount of artillery would be of doubtful value because, by the time artillery power comes into full play—especially with survey methods—the situation is liable to stabilize. We want to get the enemy on the move and to keep him moving. Warfare of the 1918 type is quite possible under certain conditions, and it has already been shown that continental nations are organizing to that end. We are, therefore, probably right for the fulfilment of our tasks to increase our close-support fire ; and stress in that respect might be laid on mortars rather than machine guns and on smoke rather than high explosive. But such an organization takes no account of modern environment and would not

be long effective in continental warfare. There, apart from garrison troops, we require wholly mechanized forces. The latter will need to be accompanied by infantry for guard duties, river-crossing and minor operations, at the rate of about 300 men to a tank brigade. These troops will best be transported in capacious armoured carriers of the Christie wheel-cum-track type.

We have now found, either in our own or continental organization, or in discussions on Captain Liddell Hart's book, certain data on which to build. They are :—

(i) That infantry should be lightly equipped ;

(ii) That infantry proper should consist of riflemen and machine gunners, man-portage of arms and ammunition being used throughout, so that the unit can be motorized at once and completely with its normal equipment ;

(iii) That further fire-support should be furnished by units outside the battalion—machine-gun units, mortar units, etc.

This would seem to indicate the grouping of three rifle battalions and one close-support battalion into a brigade.

The rifle battalions might normally consist of headquarters and three rifle companies each of three platoons. The demand for fire power in the defensive requires that each platoon should contain two machine gun sections. There should be no vehicles ordinarily on establishment. Plans should, however, be prepared for movement by Government hired or requisitioned transport, according to local conditions. As the movement of large units by M.T. is a cumbersome affair, and as speed of movement is often of more importance than numbers, the battalion establishment might be kept low—say at 450.

The close-support battalion should be wholly mechanized. Its movements will then not be embarassed by a variety of speeds, and the brigade commander will be able to make full use of it in affording support as the various conditions of battle may demand. The machine guns should be able to fight either on wheels or on the ground, and their vehicles should be armoured. The mortars would be fought from the ground. The transport of the battalion would be permanently on charge. A suitable organization for such a unit might be :—

(*a*) Headquarters, containing 12 light cars for reconnaissance and 12 light tanks for anti-tank work ;

(*b*) Machine-gun company, comprising 3 platoons, each of 8 guns ;

(*c*) Mortar company, comprising 3 platoons, each of 4 mortars.

The organization by threes would admit mortar and machine gun platoons to accompany battalions on special missions. On the occasions—

rare if we exclude work with the Indian Army, where the British Army has to act in country impassable to wheels—pack transport would have to be improvised.

Battalions forming part of a mechanized brigade would have a special organization. They would consist of riflemen only with two companies, totalling in men not more than 300, and their transport would be permanently on their establishment. They would retain old regimental names but promotion for officers would be effected in the mechanized force.

The British Army in India needs mechanization as much as does the Army at home. In police duties and operations on the plains, troops on tracks or wheels are invaluable. On and beyond the Frontier, war is becoming more and more an affair of roads and the despatch of short-range, lightly equipped forces based on roads. The Cardwell system, as between England and India, will, therefore, fit in with the proposed scheme. Between England and Colonial stations, there will be difficulty; for infantry in the latter are only susceptible to a mild form of mechanization. The situation would be eased by a wider use of local forces or forces enlisted from Africa.

At each step of the reorganization it would be possible to review the situation before deciding on the magnitude of the next step. Inherent to such a process is a necessary slowness which affords the surest of safeguards against overstepping the danger line. Yet, dilatory as it may seem, it is far better than marking time as we are doing now. The fact that for some years no reduction in the existing number of battalions would be needed should tend to the smooth introduction of the change suggested.

As yet, although foot soldiers, as such, are largely obsolete, we have not disbanded any of them to find money for tanks. We are not sure of our own judgment. We have a horrid feeling that we may be wrong, and the responsibility is great and lasting. We fear possible antidotes—the high velocity bullet and the A.T. gun—though we know the Navy never returned to wooden walls during the periods when gun appeared to be beating armour.

There are always risks. In whatever plan that may be advanced it will always be possible to pick holes, for perfection is not to be found. Perhaps we shall find the necessary courage to act, now that we find that none of our fears have materialized during the decade during which we have shirked a decision. We have kept well ahead of others in thought, in research and in material. Our machines have not become seriously obsolete, nor have antidotes materialized to any serious extent in re-armament. There is but little sign that possible opponents are

NOTE.—Towards the close of the above article a reference is made to "the high velocity bullet" and its possible effects on the adoption of armour trying to catch us up. Were we, therefore, to pursue the policy of mechanization in logical fashion, it is almost certain that we should gain a decisive initial advantage in war from which an adversary could hardly recover. The reformation of infantry should be one of the first steps towards that end. But only when its role is clear can we begin to reshape it.

NOTE.—Towards the close of the above article a reference is made to "the high velocity bullet" and its possible effects on the adoption of armour in the field. In the last number of the JOURNAL (ARMY NOTES; U.S.A.; p. 435) the views of the American Chief of Staff were quoted on the subject of such a bullet. There is little doubt that this bullet does exist and that the production of an infantry machine gun firing a rifle calibre projectile endowed with a muzzle-velocity of nearly 6,000 foot-seconds may exercise an influence on the design of armoured fighting vehicles which can neither be foreseen nor altogether compared to the struggle of gun against armour at sea. In France exhaustive experiments with such bullets were carried out over twelve months ago with results that were alleged to be not altogether conclusive. But the progress recently achieved in Germany with the Gerlich bullet and the (sporting) Halger rifle leave little room for doubt that a far-reaching change is within sight in the province of infantry rifles and machine guns. Allusions to the supply of such weapons to infantry and cavalry in the near future may already be found in the continental military press of to-day. —EDITOR.

BACTERIAL WARFARE

By MAJOR LEON A. FOX, U.S. Army Medical Corps.

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THE question of bacterial warfare has been brought forward from time to time since the World War. The use of the organisms that cause communicable diseases as an instrument of warfare was considered by the Conference on the Limitation of Armaments held in Washington in 1922. An International Commission consisting of Professors Pfeiffer (Breslau), Bordet (Pasteur Institute), Madsen (Copenhagen) and Cannon (Harvard), appointed at the time, reported to the League of Nations essentially as follows :—

(*a*) The effects of bacterial injury cannot be limited or localized ;

(*b*) Modern water purification methods protect against the organisms of typhoid and cholera ;

(*c*) Plague is a disease that would be as dangerous for the force using the organisms as for the attacked ;

(*d*) The danger from typhus has been exaggerated ;

(*e*) Modern sanitary methods are effective in controlling communicable diseases.

Following this pronouncement by these eminent scientists, the question of bacterial warfare suffered a lapse of interest ; but during the past year, as an incident of the preparation for the Geneva Convention, there has been a marked revival of concern in this supposed bugbear, bacterial warfare. Possibly this is only a part of the effort of professional pacifists to add all the imaginary frightfulness they can picture to the known real horrors of war.

The fact that a conquered nation, possibly of superior physical development, has considered a weapon to be a cruel and brutal implement did not cause it to fall into disuse. The only thing that caused these weapons to be practically abandoned has been the development of such protection as caused these implements to cease to be effective, or

because other instruments were designed of greater range and effectiveness. These factors are the only things that have ever caused a weapon once used successfully to be abandoned.

The outcry against the use of chemicals seems to people of this day to be quite a serious matter, and some wonder whether their use will be curtailed by this influence. The following factors should be considered before we make a decision :—

(*a*) No effective weapon has ever been abandoned until a more effective weapon or protection has been developed or has rendered the instrument useless.

(*b*) The hue and cry that attended the introduction of chemicals is not unusual on the introduction of a new weapon. The early use of gunpowder produced a reaction in every respect similar to the cry of the present-day pacifist against gas.

Will the use of chemicals in warfare be abandoned? Probably not. Will the use of chemicals be curtailed? Certainly; as the race progresses, and as new and more effective weapons are designed; but not before this advance is made. Will the next advance in warfare see the use of biologics? Will the next agent used be the living organisms, bacterial warfare—the scourge of armies from the most ancient times, the communicable diseases?

Before attempting to answer these questions the subject of biologic warfare will be considered in more detail, because here again we encounter most elaborate and fanciful statements.

A review of military history reveals the great influence that disease has played in past wars. Results have been decisively influenced in many campaigns by epidemics of communicable disease. In some campaigns disease has caused such losses that the combat has reached a stalemate. However, in certain instances, for unknown reasons, there has been a great difference in the degree to which combatants have reacted to the epidemic conditions. In a few cases we are able to understand why the communicable diseases appeared to have greater invasive power toward one of the armies; in other instances we do not understand clearly why there was a difference in the degree of involvement of the forces.

Volumes have been written on the epidemic diseases that have attacked military forces. We will not attempt to review this extensive literature, but the doctor, especially the epidemiologist, knows that the student of history who reads only of tactics and strategy, the victories and defeats of a campaign, without familiarity with the medical history of war, is likely to give some commander credit for success or failure

that all too often has been caused by some epidemic of communicable disease. This is not meant to depreciate military success, for the great general is often a great sanitarian, and even Alexander may owe a part of his success to his doctor—philosopher—teacher, Aristotle's advice to " boil his water and bury his dung."

We can search the pages of military history down to the XXth century before finding a campaign where the missiles of the enemy produced more casualties than epidemic disease. In most of the ancient campaigns of any duration some one of the great military plagues did more to decimate the military forces than all the man-made munitions: I say " one " advisedly, although often many infections raged, and famine and scurvy accompanied the communicable diseases. What was the nature of these ancient pests? Were they diseases of that age now no longer known? No—the military pests that existed then are still with us.

The Big Six of all war-time are :—

(1) The Enteric fevers—typhoid and the para-typhoids.
(2) The Dysenteries.
(3) Cholera.
(4) Typhus.
(5) The Plague, Bubonic Plague, the Black Death.
(6) Smallpox.

Do not consider for a moment that the above diseases had any monopoly of the right to destroy armies. It is probable that at times influenza and the epidemic pneumonias took such heavy toll that but little fuel was left to be consumed by the Big Six. Again, under conditions where malaria is endemic, this disease is second to none in the production of non-effectives in military ranks. In fact, measles and epidemic meningitis might well be added to the list of military scourges.

Nevertheless, it is not our purpose to consider the epidemic conditions of the armies of the past, but rather to consider the belief that, if these infectious agents were able to produce such frightful outbreaks of disease by the simple process of chance infection under natural conditions, then, in the hands of man as a military weapon, they may well prove even more destructive; and to show that this opinion fails to consider the fact that the same measures that are now so efficacious against the chance infections occurring in nature may prove of equal value in combating the same agency of destruction when used by man.

We have presented biologic warfare in all its horrors; now let us analyse the problem in detail. What agents can be used to produce

death and disease? How can these agents be introduced into the bodies of the enemy? We will discuss these questions in the order stated.

The biologic agents available for warfare are:—

(1) The communicable diseases.
(2) Other infective processes (such as wound infections).
(3) Toxic products of bacteria.

The communicable diseases are well known. They are the so called transmissible diseases that produce epidemics. They are caused by a living contagion and are spread from man to man or animal to man by various channels of transmission. All of the Big Six and the other diseases mentioned above belong to this group.

The second group, the other infective processes that are available, include such infective materials as the agents that infect wounds, gas gangrene, tetanus, anthrax and other wound contaminations that are infectious but not communicable.

The last group of dangerous agents are the toxic products of bacterial growth. We will mention but a single terror-inspiring example—botulinus toxin. A portion of this toxin almost inconceivably small, when introduced into the body by any channel, is lethal.

The important question, then, is how are these agents to be introduced into the bodies of the enemy to produce casualties? In addition, any proposal for the deliberate use of pathogenic organisms as a means of warfare will have to consider the question of how to produce a destructive epidemic in the forces of an opponent and at the same time protect one's own forces from invasion by the virulent organisms in question. Certainly at the present time we know of no disease-producing micro-organisms that will respect uniform or insignia, and the use of bacteria in warfare for the destruction of opposing forces will have to be predicated upon the successful prior immunization or the complete isolation of the forces employing the disease-producing organisms.

This investigation must therefore begin with a study of the channels of infection. The communicable diseases may be classified on the basis of their "Routes of Transmission." By this is meant the path that the living contagion follows when it leaves the body of the sick man or animal, or in some cases the carrier, to enter the body of the susceptible host to produce disease. On this basis we may classify the communicable diseases into intestinal diseases, respiratory diseases, direct contact diseases and insect-transmitted diseases.

The intestinal diseases are produced when some small portion, usually a microscopic portion, of the material from the intestinal canal

of the sick man with its living micro-organism, is introduced into the alimentary canal of the susceptible individual. Typhoid, cholera, and dysentery are well-known examples of this type of disease. The respiratory diseases, sometimes known as "sputa-borne" or even "air-borne" diseases, are the communicable diseases spread by the transmission of living micro-organisms from the respiratory tract of the sick to the respiratory tract of the invaded. This group of diseases is of very great importance and embraces such conditions as the common cold, influenza, pneumonia, diphtheria, epidemic meningitis, smallpox, and possibly of special importance for war purposes, the pneumonic form of bubonic plague.

The group of diseases that we refer to as "insect-transmitted" are those where the invasion of the new host is effected by the bites of insects which have previously fed on an individual—man or animal—infected with the disease in question. A period of incubation on the part of the insect between feedings on sick and feedings on individuals to be infected is necessary in certain instances; with other diseases such interval is not required. Examples of insect-transmitted diseases that require an interval for the development of the contagion within the body of the insect after feeding on the infected individual are malaria and yellow fever, both transmitted by mosquitoes.

Bubonic plague, a disease of rats that is transmitted to man by the bite of the rat flea, does not require an incubationary period for the rat flea to develop infectiveness.

The venereal diseases are direct contact diseases. They are of profound military importance and have proved decisive factors in certain past wars; notably influencing the European campaigns of the XVth and XVIth centuries. The deliberate use, however, of this means of injury is fraught with difficulties when we plan a method of securing personnel to effect the necessary exposure. The soldier's danger from the venereal diseases will not come from the openly avowed war-time enemy who loves him least, but from the money-loving or uniform-worshipping ladies who profess to love him most. Therefore, while these diseases may at times exceed all other causes of military non-effectiveness, we can dismiss them without further discussion while we are considering bacterial warfare.

It follows, then, that the communicable diseases that constitute an epidemic or pandemic threat to the military forces are the intestinal, respiratory and insect-transmitted diseases.

The Intestinal Diseases.

Mankind is all too familiar with the terrible epidemics of typhoid, cholera, dysentery and the diarrheal conditions that have destroyed

military forces in the past. However, it is highly questionable if this group of diseases will ever in the future cause any such catastrophes for the reason that the epidemiology of these infections is so thoroughly understood, that modern sanitary methods and immunization processes have rendered comparatively innocuous these hazards of earlier armies.

The deliberate use in warfare of these agents, however, we shall consider. While occasional small outbreaks of these diseases may be due to food infections, real epidemics of this group of diseases are only traceable to infected water and milk supplies, or to such a complete sanitary breakdown that general fecal contamination of food supplies occurs. The possibility of contaminating a milk supply presents practically insurmountable difficulties, although it is theoretically possible that agents might use such a means to discommode and harass civil populations. It has, of course, no practical application to the military forces themselves.

Contamination of water supplies of civilian communities by means of infection of large reservoirs and storage basins, where the water is held awaiting consumption, is a possibility. Contamination, to be effective, would have to be subsequent to treatment by the modern water purification plant consisting of filtration and chlorination, or of course it would be valueless; but this is within the range of possibilities, and it is possible that future wars will reveal that agents may make an effort to contaminate municipal water supplies.

The use of the intestinal group of diseases against forces in the field would probably prove entirely ineffective, because modern water purification methods and the close supervision of the water supply that is accepted as a necessary incident of military service will absolutely preclude the successful employment of this means of combat.

However, it may be well to stress the fact that the reason modern armies, and for that matter all civilized communities, do not have serious epidemics of these diseases is not because the infective agents that cause these diseases are not present or available, but because modern sanitation protects the personnel.

Let us take a typical example, typhoid fever. The incidence of typhoid in our civil population has been greatly reduced during the present century. Let no one think, however, that this is due to any scarcity of the typhoid bacillus, while it must also be remembered that a civil population has not had any general immunization such as helps to protect an army. Typhoid has not retreated to the outskirts of civilization; it is all about us; every country is infected. Typhoid-carriers in the United States possibly number 100,000, and are generally without supervision. The reason we only have about 5,000 deaths per

year in the U.S.A. instead of about 100,000 deaths from typhoid fever is because the great mass of our people now use water that has been rendered safe by filtration or chlorination. They consume milk that has been pasteurized and other foods that have been protected.

The same statement may be made concerning the low incidence of the dysenteries. The infection is present, but epidemics do not occur because our sanitary measures are effective. We need not fear any external infection with this group of diseases; we are already grossly contaminated.

The die-hards will say that cholera is not so easily handled and is not at present a problem in America. Granted. We do not have cholera in the States; but our army and our people do live in the presence of cholera without having epidemics of the disease. The Philippine Islands, where our army maintains an effective fighting force entirely free from this terrible scourge, has a carrier incidence of the vibrio, which causes cholera, that is always high.

The intestinal group of diseases will certainly not prove destructive against any civilized nation which cares to pay the price of the protection that modern sanitary methods provide.

The Respiratory Diseases.

In leaving this group of diseases we proceed from the problem that represents the greatest triumph in preventive medicine to the group of diseases that baffles the best efforts of all health workers. In the control of the intestinal diseases we have so much to be proud of; in preventing the respiratory diseases we have accomplished so little. This is stated with a full knowledge of the wonderful results that have been obtained with smallpox vaccination, and the immunization to diphtheria by the use of toxin products, as well as with a full realization of the fact that we are on the threshold of equally great accomplishments in controlling scarlet fever.

It should be noted that these great accomplishments are not sanitary triumphs such as glorify our work with the intestinal group of diseases, but immunization processes. Not being able to prevent the infection reaching mankind, we take advantage of the fact that familiarity with the organism, while not breeding contempt, does produce immunity. Therefore we use the only method that appears to offer any great protection against the respiratory diseases in nature, namely, immunization. It must be admitted that health workers can accomplish practically nothing in the way of protecting peoples from infection with the great host of respiratory invaders, and such protection as we have is due to either the natural or artificial exposure to these organisms.

In this group we find a number of maladies that are serious enough to be effective war weapons if ways of using them can be devised. However, before proceeding we should call attention to the fact that this group also includes a large number of diseases that are not suited for military purposes. For instance, smallpox, though a very serious epidemic disease, must be dismissed immediately, since all military forces are immunized to this dreadful scourge.

Many of the diseases of childhood, while constituting a military problem at time of mobilizing rural recruits, are not suitable for military purposes for the reason that the factor of age-susceptibility is of so much importance when we consider the entire group that comprises our population. As an example we may mention diphtheria. While in childhood a very high percentage of the population is susceptible to this disease, the great majority of these same individuals develop considerable natural immunity to the organism that causes diphtheria without further interference than normal ageing. Therefore, while we see epidemics of diphtheria in schools and orphanages, we do not encounter serious outbreaks involving large numbers of any adult population. This disease is cited only as an example wherein the factor of age-susceptibility is important; there are a number of diseases that show this phenomenon and would, therefore, be unsuited as offensive military weapons.

Certain conditions, such as influenza, pneumonia, and the common cold, do not show a marked tendency to limit their injury to any one age group and would be efficacious if they could be used against military personnel. Mankind is as helpless to-day as at any period in history in the control of these diseases; also they are very serious conditions that produce great numbers of non-effectives, and in the instance of the epidemic pneumonia they result in a very high mortality.

Before we surrender to the individuals who threaten such frightful havoc with this group, we may well ask how they are going to start an epidemic of influenza, pneumonia or the common cold. If they answer that they will introduce the germs that cause these diseases we can well laugh at them. The process is not so simple. The factors that make respiratory epidemics are not so elementary. They include not only the infection of the individual, but the question of the resistance of the infected animal. The organisms that cause these diseases are all about us. They are always with us. Epidemics mean more than simply infection; they mean the rapid transfer from individual to individual of these infective agents; they mean a lapse in the immunity of the invaded, and possibly something else.

I do not know of a bacteriologist or an epidemiologist who can tell how to start a respiratory epidemic unless the stage is especially set. I know many who are certain that whenever a large group of individuals, man or beast, is placed under poor hygienic conditions, with *overcrowding*, poor ventilation, and exposure to unfavourable climatic conditions, or other factors that decrease resistance, respiratory outbreaks will occur in spite of any precautions that can be taken, and that if large numbers of highly susceptible individuals (rural populations) are present the outbreak can be expected to assume epidemic proportions.

It is also worthy of note that when epidemic conditions prevail certain organisms may possibly have greater invasive power, since then apparently, populations that were not so susceptible or readily invaded may be attacked when they previously escaped injury. It will be noted that, as in the case of the intestinal diseases, so with the respiratory diseases it is not a simple case of introducing infection that constitutes a menace. The organisms that produce most of these diseases are always with us, and epidemics mean more than infection. While we cannot understand exactly how epidemics start, and we question the ability of a military agency to produce an epidemic of one of these diseases deliberately, we feel certain that if bacterial warfare is ever contemplated they will not think of using the respiratory group of invaders for the reason that quarantine, isolation, and all other methods to control diseases such as influenza, are practically valueless. The torch once set off might destroy friend and foe alike, and would therefore prove of no value as a military weapon.

The two diseases in this group that are most frequently mentioned are influenza and epidemic meningitis (cerebrospinal fever), possibly because of their importance during the World War. All that has been stated above applies with especial force to influenza, where, in addition to the fact that no one knows how to control this disease, we must add that we are not even positive about the actual organism that causes the condition. Epidemic meningitis, on the other hand, is a very definite, specific disease due to a very well-known organism. We must admit at the outset that this is a very serious disease, and that it often assumes epidemic proportions in military organizations. However, if we stop to consider the nature of the organism and the epidemiology we see how entirely unsuited epidemic meningitis is for use as a military weapon. The organism, the micrococcus of Weichselbaum, is so delicate that even on the most favourable culture media it rapidly dies when exposed for even a few hours to temperatures much below that of blood heat. This disease is spread by carriers, and the organism must be introduced almost directly from the nasal pharynx of the carrier to the

respiratory mucous membrane of the individual invaded or it will be destroyed by the unfavourable temperature conditions while *en route*.

Those individuals who think this disease may be used for military purposes will answer that carriers in the form of prisoners, etc., would be introduced into the opposing forces. To those who know anything about epidemic meningitis this suggestion is ridiculous. Any military aggregation of any great size already has so many carriers present (anywhere from 2 to 30 per cent.) that the introduction of a few more or less is of no moment. Epidemics of meningitis only occur when *over-crowding* is associated with conditions that lower the general resistance, such as exposure, unfavourable climatic conditions and fatigue. Meningitis is, and probably always will be, a military problem ; but the individual's friends and associates, not the enemy, are the great problem with this disease.

We will not attempt to tabulate the various respiratory diseases, for the story would always be not so much a question of the great danger of the introduction of the infective agent, but the creation of epidemic conditions, a soil in which the organism could produce an epidemic, that is over-crowding and lessened resistance.

The Insect-Transmitted Diseases.

These diseases will probably most certainly influence wars of the future as they have in the past. An invasion of such a country as Mexico, at the present time, would constitute more of a sanitary than a military problem. With malaria, dengue, and possibly even yellow fever along the seaboards, and typhus endemic in the plateau district, the main problems would be sanitary. Bubonic plague might also be encountered here as well as in any other place. This disease—bubonic plague—is the disease entity that many consider best suited for military purposes. To begin with, it is a most serious malady—a decimating disease that has most profoundly influenced warfare in the past. It is possible that the rise of the Mohammedan world was due to a great extent to the fact that Europe was in the throes of the greatest scourge mankind has known, the plague, at the time that Mohammed's followers were ready to organize and extend the influence of the crescent until the horns were about to encircle the Mediterranean. Certainly these Arabian tribesmen had never shown any signs of military greatness or valour prior to this period, and it is probable that their religious ardour would have met with small success against the well-organized nations of the time if these nations had not been practically exsanguinated by the "Black Death."

The use of bubonic plague to-day against a field force, when the forces are actually in contact, is unthinkable for the simple reason that

the epidemic could not be controlled. Infected personnel captured would provide the spark to set off possible outbreaks of pneumonic plague in the ranks of the captors. Infected rats would also visit and spread the condition. An advance over terrain infected with plague-bearing rats would be dangerous. Therefore, except as a last desperate, despairing, hope of a rapidly retreating army, the use of plague by forces in the field is not to be considered.

The use of plague to harass civil populations presents less difficulty than the use of the organisms against a field force. Those who think that plague will be used as an offensive weapon consider that civil communities may be infected by introducing plague-infected rats. Of course, this is easier to state than to accomplish, but it may be possible for airplanes flying low to drop recently infected rats. At least this is the statement that the individuals make who consider feasible the use of this weapon. Even with so terrible a pandemic disease as plague, however, there is a great deal more to the question of epidemics than mere infection. For instance, to cite an example, one that Gill so forcibly states, "Not half a dozen cases of plague occurred amongst Europeans (including British troops) stationed in the Punjab during the year 1924, when about 500,000, or one-fortieth of the indigenous population suffered from the disease."[1] If these intelligent people were able to avoid the infection when residing in an environment that was literally infiltrated with the infection, it certainly should be possible to control bubonic plague in a population such as we have.

For that matter, the question of plague is not a condition that takes us to the outskirts of civilization. Our own Pacific Seaboard became infected in 1900, and following the San Francisco earthquake the infection extended and is now more or less endemic as a rodent disease involving not only rats but ground squirrels. Here again it is not a question of can we control the infection; we are controlling it, and have not had an outbreak of human plague of sufficient size to designate as an epidemic.

The other insect-transmitted disease that is most frequently assigned a place of importance as an agent suited for warfare is typhus. This disease is certainly terrible enough, and the military and civil populations that have been destroyed by typhus bear witness to how effective this agent of destruction can be. However, again we have a condition that is easily controlled. Complete solution of the problem of endemic typhus is not yet in print, although it is probable that the work of such men as Dyer, Maxcy, and Zinsser will soon offer a complete explanation of how this scourge simmers along during the inter-epidemic periods. Epidemic

[1] Gill, C. A.: "The Genesis of Epidemics." London, 1928.

typhus is thoroughly understood. The epidemiology is so simple that it can be embraced in the name of the transmitting insect, the body louse. The control of epidemic typhus is the simple question of the control of louse infestation. Of course, quarantine will help to prevent the introduction of the infection, but quarantine is futile if an army is allowed to become lousy. A lousy army may become the victim of typhus, even in America, without the introduction of infection from extraneous sources. The weight of opinion in the best epidemiological minds is that, as Maxcy suggested, endemic typhus is probably carried over between epidemics in a rodent reservoir. Endemic cases occasionally occur when transmitted to man by an insect, and when the infection is passed from man to man by the body louse, with the resulting enhancement of virulence, epidemics may be expected to result.

The difficulty of starting an epidemic of malaria, yellow fever, or trypanosomiasis (sleeping sickness) appears to be obvious, for no one has suggested the use of these agents. Those who understand the epidemiology of these diseases know they are not suited for war purposes, even though they realize the problem they present to military forces in endemic areas.

This completes the study of the communicable diseases. We have discussed in some detail practically all except the direct contact group. The only diseases of this group of great military importance are venereal, and we have given our reasons for dismissing this group from consideration.

The Infective Processes.

Certain disease processes that affect the tissues are caused by living organisms and are, therefore, designated as infective, even though they are not considered communicable in the sense that they tend to be transmitted from man to man. These disease processes include such infections as tetanus, gas gangrene, anthrax, and the ordinary pyogenic (pus-forming) invaders. The agents that produce these infections have all been mentioned as possible war weapons, and it must be admitted that so far as the first three are concerned, with some scientific judgment on the part of their sponsors.

The agents that cause tetanus, gas gangrene and anthrax are not delicate organisms such as the relatively short-lived, easily-destroyed pathogens that cause most of the communicable diseases. They are very resistant, spore-forming organisms, generally capable of a prolonged period of viability without loss of virulence, even when separated from the animal tissues. It is not surprising, therefore, to find one of this group (anthrax) selected as the infectious agent best suited for military

purposes by a science student preparing an undergraduate thesis on " Bacteriologic Warfare."[1]

In fact this selection of anthrax and the entire study shows more intelligent thought than any article that has come to the attention of the writer. His description of the characteristics of the proposed bacterial invader are worth quoting:

" What shall we say are the requirements for a perfect military pathogen? It attacks preferably both man and animals. It must be quick-acting, highly virulent, and capable of causing disease in small quantities. It must be highly resistant, capable of surviving outside the body under the most adverse conditions, and even resisting partial cooking or a careless attempt at sterilization (a spore-former). The causative organism should be able to force its entrance through all the avenues of infection; respiratory tract, alimentary tract, and breaks in the skin. The disease should not be too actively contagious, and it must be very well understood—for pathogens should never be used without contemplating the possibility of their getting out of control. Finally, and perhaps most importantly, it should be possible to obtain large quantities of the pathogen in virulent strain and spore form with the least possible manipulation and delay."

After this excellent description of the perfect hypothetical agent, he selects anthrax as the agent best suited to meet the requirements of a bacterial weapon. Still, I cannot agree with him that " Anthrax satisfies the requirements almost perfectly"; but I believe all bacteriologists will agree that he has selected the agent that most nearly meets the requirements he has so well outlined.

These spore-forming invaders are a real problem. Tetanus and gas gangrene are pathogenic processes that have always been associated with gunshot wounds and are, therefore, of special interest to the military surgeon. They do not produce epidemic diseases, however, and they are not communicable. They have to have a portal of entry made for them, a wound, and while the use of these organisms to contaminate battlefields might cause an increase in the number of cases of tetanus and gas gangrene, they would not increase the number of casualties. They would only complicate the treatment of those already disabled. It might be added that we have an entirely satisfactory serologic prophylactic agent for tetanus, and that as a result of the surgical advances of the last fifty years, gas gangrene is less frequent than in the pre-bacteriologic days.

[1] " Some Thoughts on Bacteriologic Warfare," C. F. Pentler, Mass. Institute of Technology; Department of Biology and Public Health.

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We cannot dismiss anthrax so readily; however, it is worthy of note that although anthrax is almost a world-wide disease, nevertheless anthrax infection of gunshot wounds is practically unknown. If gross contamination of battlefields with the organism of anthrax is effected, it is granted that cases of anthrax infection of wounds will occur, and possibly some few cases of infection in individuals who have not been wounded; but when we consider that human epidemic anthrax is unknown during the bacteriologic era, I question if we need fear greater danger from this organism than contamination of wounds.

It will be noted that up to this point we have not discussed the technical difficulties that a military force would have in contaminating a hostile force. The difficulties in the case of the communicable diseases are so obvious that they need not be mentioned. The epidemiologic factors make the communicable diseases unsuited for offensive military use. The causative organisms are all either short-lived when separated from the living tissues or else readily destroyed by ordinary routine sanitary precautions.

We cannot make this statement concerning the highly resistant infections such as tetanus, gas gangrene and anthrax. These agents are admittedly the most dangerous; but it must be remembered that to be dangerous they must be alive, and that many technical difficulties present themselves, if living agents are adopted, that are not present when missiles and chemicals are employed. Shells can be used to project missiles and chemicals on to an enemy many miles distant; but bacteria cannot be treated in this way. No living organism will withstand the temperature generated by an exploding artillery shell. Airplanes may contaminate terrain, but their effect would be quite local and probably less dangerous and less certain than high explosives used in the same way.

It is not maintained that bacterial contamination is impossible. A retreating enemy may hurriedly contaminate the terrain that is to be evacuated. However, it is believed that the use of living organisms in offensive warfare presents technical difficulties that are not generally considered. The contamination that agents and other individuals could effect, using the only really effective agents we have mentioned—the highly resistant, spore-forming organisms that are so dangerous to wounds—would prove too local to be of any value whatsoever.

Toxic Products.

The forms of bacterial warfare include not only the possible distribution of living organisms in the force of an enemy, but the possible use of toxic products derived from bacteria. Certain of our bacterial

toxins are the most deadly poisons known. The toxin of the bacillus botulinus is so powerful that instances have been recorded where toxins have been produced so toxic that .005 milligramme killed a 250 gramme guinea pig. This material, botulinus toxin, is poison for man. It is possibly the most toxic agent known, and will produce the lethal effect in whatever way the material is introduced into the animal. If consumed with food, injected into the tissues, or even dropped on to the mucous membrane or conjunctiva, it is equally deadly.

This must be the material referred to when we read such dramatic statements as the following: "An airplane can carry sufficient toxins to destroy an entire city." Such statements have an element of truth in them; in fact they are conservative. An aeroplane could carry enough of the botulinus toxin to destroy every living man in the world *if* administration of the toxin was as simple a process as production and transportation.

There were over 100 billion bullets manufactured during the World War—enough to kill the entire world population 50 times; but a few of us are still alive. It is easy to calculate the lethal (fatal) dose of a toxic agent; but I do not think it is so easy to reckon on its casualty-producing power as a military weapon.

The hostile aviator will not be received with a welcome, nor can he expect to land at an aerodrome near any large city and find the entire population lined up ready to accept the carefully measured lethal dose of botulinus toxin.

The release of vast quantities of botulinus toxin over a large city may produce human casualties; nevertheless, the extent of the damage might be only the wholesale destruction of rodents, sparrows, and possibly numerous cats and dogs. It is difficult to evaluate properly the possible effects of the bacterial toxins. Certainly such statements as an airplane destroying an entire city with toxins is ridiculous; but they may have a value comparable to chemical agents, with this great disadvantage, however, that bacterial toxins are readily destroyed by heat; therefore, like bacteria, they are unsuited for use in shells.

Animal Diseases.

The use of living organisms to produce disease in live stock, such as horses and mules needed for transportation of army equipment and supplies, has been mentioned as a possible form of bacterial warfare. It is believed that the difficulties here are quite similar to those mentioned for diseases attacking man, with the great advantage to the defence which the veterinary officer will have in controlling epidemics. The veterinary officer can destroy any animal or group that he considers

a menace to the health of the animals in the army. The medical officer cannot take such steps to control epidemics that threaten human populations.

If we expand the term bacterial warfare to embrace such phases of biologic warfare as will include the agricultural pests, then, an additional factor to consider is the fact that agents and possibly hostile aviators might inoculate growing crops with such pests as the boll weevil, the corn borer, the Mediterranean fruit fly, and like destructive agents. These agents in most instances, however, take so long to invade sufficient terrain to be effective in destroying crops that their value in actually overcoming the resistance of a foe is questionable. They take several years to advance over a large area, and might prove an economic problem years after the war has been completed; therefore, they violate one of the fundamental ideas in warfare, since they would interfere with the ability of the conquered nation to pay the victors for the defeat they had suffered.

Conclusions.

It is believed that the development of implements of warfare represents an evolution based on the gradual application of the improving mind of man. The one factor of importance in this development has been effectiveness. It has been a question of the clever mind versus the strong back; of the thinker versus the lifter. It is believed that the future of warfare will be based on the same principles. It is, therefore, apparent that the question of whether chemical munitions will be used or not, and whether bacterial warfare will be used or not, will depend on their practicability rather than on the sentimental reactions of pacifists.

On the other hand, I consider that it is highly questionable if biologic agents are suited for warfare. Certainly at the present time practically insurmountable technical difficulties prevent the use of biologic agents as effective weapons of warfare.

AIR DEFENCE

Translation of the Preface, specially written by Maréchal Pétain, Inspecteur Général de la Défense Aérienne du Territoire, for the French edition of Major-General E. B. Ashmore's book on Air Defence[1].

DURING the Great War, in the course of 112 air raids carried out by 196 raiding airships and 441 raiding aeroplanes, the Germans discharged on British soil some 300 tons of bombs. These caused serious damage, as well as killing or wounding 4,951 persons. General Ashmore's book gives an historical retrospect of these attacks and describes the development of the anti-aircraft defences of Great Britain; in conclusion it puts forward some views on the future of air warfare. Interesting lessons may be derived from a perusal of the work, relative both to the present and to the future.

The year 1917 was that in which the German air raiders caused the greatest destruction in Britain; and at this period the German air force had definitely mastered the British defences. It was not until the close of the year, and as the result of experience, that the British defence was fully organized. By 1918, it had become so effective that it virtually deterred the enemy from attempting to fly over British soil. The hostile aircraft then turned their attention to the Paris district, which offered a most tempting target in close proximity to the fighting front. Up till then Paris had been subjected to three air raids only, and did not possess that experience in anti-aircraft defence matters which had been so dearly acquired by London. On this experience there finally came to be based the reorganization of the Paris defences, a model which even now serves as a guide for the organization of the anti-aircraft defence of the whole of France.

The chief weight of the British defences lay in their ground armament and organization. A network of observation posts, information centres and of subordinate headquarters enabled the central defence commander to be kept fully informed as to the movements of the enemy airships. The special equipment whereby the instant transmission of information could be effected was the mainspring of the whole organization. The

[1] "Défense Antiaérienne." Translated by Captain M. de l'Epine. (Paris, Payot. 16 fcs.).

commander, thus kept informed of the situation, could make his decision for both passive and active defence in good time. In particular, he was enabled to warn his air squadrons, and thus bring them across the path of the raiders. This is a specially difficult operation; for, in the air, even by day, the fighter is blind. The ground organization alone is able to direct its movements in the light of information that comes to hand. In 1918 the British fighters were already fitted with W/T receivers. Several times they were successful in achieving the complicated manœuvre of concentrating considerable fighter formations against a raiding force. The perfection of their equipment and the employment of numerous fighter squadrons ably directed from the ground, were, without doubt, the main causes of the immunity from air attack which London enjoyed during 1918.

After the Armistice the whole of those defences were dismantled. Then, in 1925, it was felt that they must be reconstructed. The severe damage inflicted by the air raiders was recalled. But the moral injury had made an even deeper impression and it was realised that the epoch of splendid isolation was past. Till then the history of Great Britain and of her policy could be summed up in the words, "Britain is an island." To-day Great Britain seems to have realised that she is no longer an island, and that a Continental air force could inflict considerable harm on her soil. This is a momentous conclusion, and one that will modify the traditional bases of British policy.

The opinions concerning the future, which conclude this book, are of no less interest. Yet, in this respect, it is necessary to accept the author's views with some slight reservations. The efficacy of aerial bombardment and the importance of the danger would appear to be systematically underestimated; on the other hand, the capacity of the defence is assuredly exaggerated. General Ashmore, justly proud of the results of his organization in 1917, as well as of its reconstruction in 1925, exhibits a very natural confidence in the instrument which he has created. But as it rests on the lessons of the past alone, such confidence runs the risk of being betrayed by facts.

Even if we admit that the defence may have grown four times more effective, who could estimate the co-efficient by which it is necessary to multiply the offensive power of modern aviation—and *a fortiori* that of the future? If we claim that air exercises, as we know them, far more closely resemble reality than military or naval manœuvres, then we lose sight of the possibility of surprise from the air, which any outbreak of war may now involve; that is the moment when a hostile air force can attack an enemy country while the latter is yet unmobilized and, therefore, with its anti-aircraft defences still unready.

At the outbreak of the Great War the aerial peril did not exist. Since then no mobilization, no strategic concentration, has ever taken place. On a future occasion, in place of a parallel growth of attack and of defence, the air menace will be released instantaneously and at its maximum intensity. At that moment the defence will still be labouring in feverish haste to pass through the whole evolution, which it underwent in the Great War; for there is not the least chance of any country being in a state of ever-ready anti-aircraft defence during times of peace.

The most potent form of defence is, of course, the indirect defence, exercised through releasing the means for aerial attack, because air forces are always prepared for instant action. By the bombardment of the enemy bases the hostile air raiders can be placed in jeopardy; by the menace of reprisals the aggressor may be made to stay his hand.

It is true that direct defensive action, that is, fighters, ground armaments and passive defences, should not be neglected. Indeed, it is important that they should be so organized as to be prepared to come into action at an instant's notice; they form an integral part of the protection of a country against air raid. But the most potent direct defence resides in the defending air force, that is in its fighter squadrons.

It follows, then, that it is the information service which forms the base of all defensive organizations, since that is the only means whereby action can be taken in good time to warn both the defences and the population. Such an organization must be particularly well thought out, so that it may compete with modern aircraft which travel 70 to 90 yards a second, that is to say 120 to 180 miles in the hour. Such a result can only be attained by an exact and instantaneous procedure and by the organization of efficient information centres ready to begin work even in peace time. It is in this respect that General Ashmore's book is of value.

Unfortunately the author remains almost silent concerning the measures of passive defence that were adopted in Great Britain during the war with a view to limiting the damage caused by air raids. This form of defence, however, must play an important role in the general function of national defence. In France the whole subject is elaborated by the *Ministère de l'Intérieur* (i.e., Home Office) in accordance with the general principles laid down in the "Memorandum for the Organization of Passive Defence against Air Raid," issued on 25th November, 1931. The basic idea of this memorandum is that the responsibility for the passive defence of the civilian population is entirely a matter for the civil authorities (*Ministère de l'Intérieur, préfets, maires*) and for the inhabitants themselves. A heavy task is thus imposed on the whole French nation, a task from which they must be the first to benefit, since it must serve to limit the unbounded potentialities of future air raids.

Unquestionably it is courting a mortal danger to disregard the all but unsuspected risks that may accrue from the action of a hostile air attack. From the very first instant of war, aircraft can attack any single point of the enemy's country while their menace will be felt far and wide, and their action may be decisive against that target which they may select; moreover, they cannot be hindered with any degree of certainty from reaching their objective. Manned by inconsiderable crews, men inspired by dauntless courage, ever ready and eager for instant action, their menace is very real. The air cannot be denied to them, as might be the land and the sea. The air dominates all theatres of war. From the air, indeed, it is possible to intervene in land and sea operations, both directly in battle and indirectly from the rear, in a fashion that is the true prerogative of aircraft. Such potentialities demand consideration.

Since aviation now enters into all combatant spheres, it has come to subvert principles that have hitherto been accepted as axiomatic, and overhaul of all traditional organizations is thus required. Whenever a new instrument has called for a new technique in war, the influence of that instrument on tactics, together with its repercussions on strategy, have proved instantaneous. Thus at the opening of the XXth century automatic fire-arms, in conjunction with barbed wire entanglements, brought about far-reaching changes in land operations—and even then it affected war on land alone. What may not be expected of an instrument which can make itself felt on land, at sea, in the defence of the home country, and in the attack of the enemy's own homes? The phenomenal speed of aircraft permits them to pass like a thunderbolt from one country to another and even to act everywhere simultaneously.

Aviation causes the world to shrink; it is affecting our scales of distances, as foretold by Paul Valéry. It is bringing about profound alterations in the armed forces and even in the organization of the State. It is, in fact, the most potent defence of a country.

Indirect defence, that is the bombardment of the enemy's country, however, does not exempt us from setting up a direct defence. General Ashmore's volume, based as it is on valuable experience, cannot fail, therefore, to prove a valuable guide in the task before us.

YOUNGER GENERALS[1]

By MAJOR T. V. SCUDAMORE, V.D., The British Columbia Regiment.

AS I sit looking out of my window across the park I cannot help noticing that the majority of the firs, pines and tamaracs are withering at the top whilst the lower part of the trees is in a flourishing condition, and I begin to wonder if those trees are not typical of the armies of the British Empire. The more so because, in 1913, when I was a young Captain on strike duty in Nanaimo, in common with others of my own age, I was inclined to regard all those who had served in South Africa as being a little past their prime. It is true that the war medals made some impression on us as we were then too inexperienced to realize their real worth. To-day's ribbons do not carry quite the same weight; we are more sophisticated. The South African War was then eleven years past. To-day it is thirty-one years since that war ended; but we can still see those ribbons on the breasts of certain of our higher commanders. No wearer of the South African ribbons can be under fifty years old to-day. Yet it is a medical truth, I believe, that the average man is in his mental prime at forty-five, even if his body is not quite as active as it was or able to support the fatigue of twenty years earlier. In addition, after forty-five a man is hardly as open to new ideas and new suggestions as he was; he tends to grow set in his ways.

A few years ago on returning from Europe I mentioned to a distinguished General, still on the active list and, of course, a veteran of South Africa, that I had done two short courses with the Royal Tank Corps and a refresher at Farnborough and felt pretty well up to date. His only re-action was to say, "Well, you have wasted your time. Tanks won't be used in the next war. It will be aeroplanes and gas; even the staff will be in the air." He may be right, but my frivolous reply lacked that reverence for seniority so essential for promotion; one should never chaff a General, however dumb. I said, "It won't be the first time the staff has been in the air, Sir. This time though

[1] Major Scudamore wrote this article some months ago. In this same connexion see also "Generalship" in the JOURNAL for May, 1933.—EDITOR.

it looks like a bloody war and quick promotion." He gave me an icy look, drained his glass and talked knowingly of aeroplane scouts.

To-day it may seem to every thinking person that we are facing a very serious situation ; and it must be faced if we are to ward off disaster in the future. The Crimean War saw our soldiers led by the successful commanders of Peninsula and Waterloo days ; our sufferings and losses were terrible ; a minor satisfaction maybe was that the enemy suffered equally with us. No single General of the Crimean War was open to a new idea. Our Commander-in-Chief had fought the French for so many years that he continued automatically to refer to them as the enemy. *Tempora mutantur et homines deteriorantur* ; the electric telegraph was looked upon as a nuisance. The beginning of the Great War naturally saw our armies led by the successful commanders of the South African War, with the result that, in 1914, out of twelve original officers of the rank of Lieutenant-General and above, no less than nine of them broke down, including the Chief of the General Staff. Fortunately, what applied to our army applied to the German army, and unfortunately it applied even more to the French. General Lanrezac, the commander of the French Fifth Army, had been at the Ecole Militaire for so many years that he was incapable of forward movement under fire, though he had done nothing but preach the necessity of continuous attack—at school. We cannot afford to be led by professors in the field.

Granted that younger men will make mistakes, these will be the mistakes of imagination as against the errors of *laissez-faire* and lack of drive. General Liman von Sanders, in his " My Five Years in Turkey," pays just tribute to the splendid fighting qualities of our regimental officers and men, yet over and over again he reiterates his criticism that the staff lacked imagination. He says that we seldom gave him less than thirty days' notice before attacking, and he found that this would allow him ample time to prepare his positions with the tragic results of which we are all aware. He says that on more than one occasion we remained on the beaches when the higher ground was unoccupied ; and on one occasion when the gallant Gurkhas carried the high ground our staff were so astonished that they shelled them off. I think the facts are accurate ; for General von Sanders is a soldier who does not mince his words and has nothing to conceal—and he was victorious. The fact is the gallant, toothless old hound should be left in the kennel, however galling it may be to him, and not allowed to lead the pack.

The Navy, which is always on active service, has found it necessary to encourage its senior war-time officers to retire. It is the right idea. The same has been done in the Royal Air Force, where promotion is also accelerated by accidents. The Army has yet to show any self-

denying ordinance amongst the higher command. The strain that modern warfare puts on the commander in the field is such that every slight weakness is immediately revealed, and thousands have to suffer for the advancement of one. This is a universal complaint, and war between any modern armies would certainly disclose the same human flaw in the organization of almost any one with the possible exceptions of Russia, Japan and Italy. It may be that each of these countries possesses certain other inherent weaknesses. But the one sure fact is that their armies will be commanded by young men: that is one of the advantages of autocratic rule.

In a good British line regiment to-day it often takes fourteen years before a subaltern can obtain his captaincy, and his chances of rising to field rank are now actually growing smaller. In any case, so many years spent in a subordinate position must cause him to deteriorate and eventually to lose all talent for command. He will resemble some of the older French officers of pre-War days, who were garrisoned for so long in one town that they found time to run small businesses whilst they drew their army pay. We still have to learn the lessons, so dearly bought in actual war, that the "victory goes to the strong" and that "youth will be served." Over and over again it has been demonstrated in the British Army that the successful soldier must avoid the original expeditionary force and join the second, or avenging, army.

Again, a man who has spent too long in a subordinate position must to some extent develop an inferiority complex; the General who has been retained over long in office may suffer from the opposite extreme—so long has he grown accustomed to no contradiction and to so much adulation that he is blind to the fact that his usefulness may long have ended. A Service club is a good place to notice that phenomenon. I remember the second-in-command of a very distinguished regiment once saying to me of the commanding officer who had already been granted one extension of command, "Dear old Muggins! he has forgotten what soldiering he ever knew; but we all hope the gallant old chap will be kept on as he always wins the regimental point-to-point and the men love him and would follow him anywhere." He was kept on until the trial of 1914 brought disaster.

A young subaltern many, many, years ago used to keep an Army List in his room, in which against a number of names he had put the letters "l.d." or "l.r." One day a very senior Captain coming into this officer's quarters looked through that Army List and saw the symbols "l.d." against his name. Asking the subaltern what it meant he got the reply, "Well, I just tick off those who are likely to die or likely to retire, so as to see when I may get my third star." How many of us

have secretly done the same only to find another limpet get another extension of command. Nothing is more sure to blunt keenness than an unmerited extension of command.

Among all our great Generals, Cromwell and Marlborough are the only two who gained their victories when past middle age. The former was greatly aided by the religious zeal of his followers, as well as by the incompetence and lack of discipline of the Cavaliers; Marlborough was helped by the loyal and energetic co-operation of Prince Eugène, while he was faced by French commanders who had made their reputations many years before. In any case, Marlborough was a genius, and there is no accounting for genius, even when the great opportunity comes late in life. Clive, Wolfe, Wellington were all young men who were famous when they were thirty, and world-famous before forty. To come nearer to our own day: the best Generals of the South African War were the later and younger arrivals; Buller, Gatacre and Methuen where were they? Did Lord Roberts add to the laurels of the march from Kabul to Kandahar? Lord Kitchener proved the driving force in the team; yet by 1914 the successful organiser of victory in South Africa was really past his usefulness, all will admit; it was his name which inspired the response to his call to arms.

If our leaders were too old in 1914—and history will undoubtedly show that this was the case—our Generals to-day are now, on an average, three to six years older. That is a very heavy handicap to the British Army. Admittedly, at the end of the Great War, our Generals were the same men who had held high command at the beginning of the War; they brought the War to some sort of a conclusion, after a spectacular success in the field. But was this not the sequel of years of bloody frontal attacks; would the greatest optimist claim that they had shown any imagination or genius? Had the War been one of movement, how many could have stood the test?

The more the question is studied, the more there seems to arise the one conclusion that the next great war must be more rapid and more frightful than the last, and that, more than ever, it will be a young man's war. Youth, it may be repeated, will be served.

NAVAL TRAINING

A GENERAL REVIEW

By " OBSERVER."

THE Navy is certainly one of those human institutions which, as Admiral Richmond says in his Introduction to a recent publication,[1] " require watching, for conditions change, experience develops, new needs arise " ; and from time to time it is essential that the system of naval training as a whole, as well as the details of instruction, should be surveyed in the light of new requirements. This, unfortunately, was not always done, and at a time when ships were becoming more and more mechanized, the training of officers and men was still based on conditions as they existed in the days of masts and sails. Many of us who received our first professional instruction in the old " Britannia " will recall that, on going to sea, we were singularly ill-equipped to perform the duties even of a subordinate officer. We spent many months learning the mysteries of " standing and running rigging " ; " making and shortening sail " ; " tacking and wearing a full-rigged ship " ; we sat by the hour, robed in canvas aprons, making " long splices," " short splices," and " Matthew Walker knots," concealing their defects by a plentiful use of tallow and much rolling under foot ; and we learnt all manner of old-time orders, such as " raise tacks and sheets " ; " very well thus—keep her as she goes " ; or " watch there, watch!" But, when we stepped on board our first sea-going ship, we found that " come on board to join, Sir " was one of the few phrases which we had been taught which had a modern application. We knew nothing of a battleship's routine—which it was one of our first duties as Midshipmen to see carried out punctually ; we had been taught little or nothing of the nomenclature of a modern ship ; we were put in charge of a gun, but gun-drill was a foreign language and gun mechanism a hidden science ; the evolution of getting out nets, which at that time stirred the whole ship's company to its vitals at least once a week, was mere meaningless pandemonium to us, for although there was an admirable model of a net defence in the " Britannia's " seamanship room, it was never explained because it was no part of the curriculum.

[1] " Naval Training." By Admiral Sir H. W. Richmond ; Oxford University Press ; 7s. 6d.

In 1902, under the inspiration of Fisher, drastic changes were made in the system of entry and training of Naval Cadets. The Osborne Scheme, as it was called, has been roundly abused and, in the course of thirty years, it has undergone considerable modification—its enemies would call it complete extinction. But it marked a vital change in the education of the naval officer, one which was long overdue and which has endured ever since. That change was the introduction of systematic mechanical training from earliest days.

Admiral Richmond, in a chapter entitled "The Place of Engineering,"[1] criticises the extent to which the naval officer of to-day is trained as an engineer. "Nowadays," he says, "the captain on the bridge can turn his ship, cast her, handle her, judge how hard he can drive her into a sea without in any sense whatever being an engineer." Perhaps he has forgotten the classic instance of the spirited young Captain, brought up in the old school, who against the advice and, eventually, the entreaties of his Chief Engineer, drove his cruiser to a complete standstill and did thousands of pounds damage to her engines because he thought a hot bearing could be ignored. Again, the author argues that while the officer of a turret needs the "practical knowledge of the driver of a machine," he does not require to know "how the machinery is constructed or the scientific laws of design . . . nor is it necessary for the military officer to be able to repair the machinery." But this ignores such matters as upkeep, breakdowns in action, and replacements by spare parts—a knowledge of which is essential to a turret officer, unless he is to be entirely in the hands of his subordinates when the slightest emergency arises.

To argue that a naval officer only needs to know how to handle his ship, his guns or his torpedoes, and not to understand the principles and parts of the machinery which moves them, and how to maintain that machinery and get the best out of it, is like saying that even an experienced and reliable motorist should never look inside the bonnet of his car, and should leave all its mechanism to the garage mechanic or his chauffeur, if he has one. Splicing a rope or wire is still regarded as an essential part of an officer's qualifications as a "seaman"; but it is asserted that a knowledge of "how glands are packed" does not affect him as a "strategist or tactician." Yet the fighting efficiency of a modern ship is far more likely to be reduced by a defective joint than by a drawn splice.

The fact is that a system which would make the practical knowledge of machinery the business of a specialist class of officers and men is as

[1] "Naval Training," Chapter III, p. 14.

unsuitable to-day as the system which at one time confined the practice of navigation to a specialist branch. To deny the military branch of naval officers a proper mechanical training is to fail to equip them in what has become one of the essential qualifications for command in all its various grades.

The firm establishment of this principle does not, however, preclude periodical examination of other aspects of naval training, such as age of entry, preliminary education, professional specialization, and the attributes necessary for higher command. But, when criticising the existing order of things it is essential that they should be described correctly, and this, unfortunately, Admiral Richmond does not always do. For instance, after showing somewhat of a predilection for a classical education, he says " In the Service we have gone to the opposite extremes and attempted specialization with little boys whose minds are too immature to absorb the knowledge. We have endeavoured to instil knowledge, in fact, into receptacles which have not been rendered fit to receive it." It is arguable whether minds cannot be prepared for greater knowledge by the gradual absorption of subjects which will be of practical value just as effectively as they may be fertilized by a preliminary education which is largely academic. But, in point of fact, the education at Dartmouth College is not specialized to a great extent, and the Board of Education Inspectors have stated that the curriculum does not differ markedly from one which might be followed by boys in a Public School. Admiral Richmond also complains that " no attempt is made to differentiate the subjects of instruction according to natural aptitudes," but perhaps he is not aware of what is called the " Alpha class scheme" at Dartmouth, which is designed to fulfil this very object. In naval training, there must, of course, be a limit to the facilities given to the individual to follow his special bents; if he desires to pursue studies outside that limit it can only mean that he has chosen the wrong profession.

No one will dispute the importance of history and of English—especially the latter—as part of the preparatory education for a naval officer, and it is understood that particular attention is paid to these subjects at Dartmouth, but history cannot be regarded as more important than mathematics in early training. It is a good thing that a boy should be inspired by reading of heroic deeds and great adventures, and that he should be encouraged to read history more and more as he grows older; but it is very doubtful whether any youth in his teens can study history in that analytical spirit which makes it of special value to training for higher command. Mathematics, on the other hand,

is the A.B.C. of professional education — of navigation, pilotage, manœuvring ships in company, handling weights, the elementary principles embodied in every type of machine, electricity, and a hundred other subjects which are inseparable from the naval officer's daily duties afloat. It must not be forgotten that the Cadet requires all his application and energy directed into the right channels to make him an efficient Lieutenant, and at that early age it would be a great mistake to make him "specialize" in a course of training designed to make him a great Admiral.

If the present system had the defects of the old "Britannia" *régime*, there would be more point in Admiral Richmond's implied criticism that Cadets are not taught officers' duties; but the re-introduction of the training cruiser should go far to make good this defect. In the "Frobisher," besides gaining elementary practical experience in seamanship, gunnery, torpedo, navigation and engineering, Cadets are initiated into ship life, ship routine and Midshipmen's duties as they cannot be in a college on shore. But no amount of "instruction" can make an officer; he must be put in a position where he is regarded as an officer, and given, increasingly, the responsibilities of an officer, if he is to become efficient. The extent to which that is done must always depend to a greater or less extent on his seniors and particularly on the Captain and Executive Officer of the ship in which he is serving. Undoubtedly, the smaller the ship the greater the share of responsibility which can be given to the young officer, and the arrangement whereby Midshipmen do three to four months in destroyers, and some are appointed to "D" class cruisers, has everything to recommend it. Yet, from time immemorial, the majority of youngsters—whether officers or men—have undergone most of their early sea-going training in the big ship where there are better facilities and more seniors to look after them.

Admiral Richmond inveighs against the "bugbear . . . of the recurring examination,"[1] but, human nature being what it is, there can be no doubt that examinations are necessary in order to apply that fear of failure which will ensure application to study by the less ambitious, while giving opportunity to those who work hard or are specially gifted to come to the front. On the other hand, when it comes to promotion, advancement by competition in the written examination requires to be severely tempered by proof of other officer-like qualities. The ranks of the "Five Oners"[2] have produced some of the best officers in the

[1] "Naval Training," p. 96.

[2] Officers who secured five first-class certificates in their examinations for the rank of Lieutenant, R.N.

Navy, but they have also produced some of the worst. It is on this very subject that many people will join issue with Admiral Richmond when he proposes that entrance to the Service should be by competitive examination and that " initial selection must be made in such a manner that we can throw the net as widely as possible and catch in it all who are, or have in them the promise of becoming educated persons."[1] This seems to leave out character—not the character that may be acquired by education, but the character with which the boy who is likely to make a good officer is endowed by birth, early environment and his own inherent qualities. It is the exception that the Secondary School boy can present himself for the Navy already possessed of these essential characteristics, and it is only the exceptional boy who, starting without them, will acquire them as the result of naval training. Even under the existing Special Entry scheme some misfits get in and have to be removed before completing their time as Cadets. There is no doubt that the " interview " system of preliminary selection is for the good of the Service, and does much to prevent the entry of misfits and subsequent wasted training. It is the most difficult problem in making promotions from the Lower Deck to commissioned rank to ensure that the men selected are not merely clever examinees of good appearance and educational standards, but that they really possess those essential qualifications of an officer which give ability to command.

The idea that Head Masters should be regarded as judges of officer-like qualities in a boy, presupposes that they all have the same, and a correct, outlook on the subject: which is far from being the case.

Admiral Richmond would enter boys at the age of 16–18, give them a professional course at a Naval College for a year and a half, send them to sea as Midshipmen or Sub-Lieutenants for two years, during which they would do no instruction. If recommended by their Captain, but without further examinations, they would then be promoted to Lieutenant. After two more years at sea they would do a War Course lasting a year, at the end of which officers would be selected for the specialist branches.

This would mean that professional *instruction*—as distinct from experience—up to the time of promotion to Lieutenant would be limited to the eighteen months at the College, as compared to (*a*) the three years at Dartmouth when professional instruction is combined with general education; (*b*) the instruction in the training cruiser; (*c*) instruction during Midshipmen's service in big ships; and (*d*) Sub-Lieutenants' courses. Experience with the Special Entry has shown that boys coming

[1] *Ibid*, p. 24.

straight from school have not had the necessary grounding in mathematics to enable them to proceed forthwith to the study of navigation, while technical courses as Sub-Lieutenants are essential to equip an officer for Lieutenant's duties. Apart from this, it has been found very desirable that there should be a break in the always exacting, and sometimes monotonous, life afloat at about the age when, in shore life, a young man would be going to the University to fit himself for whatever career he had selected.

Sub-Lieutenants already do a short War Course, and a Lieutenant of two years seniority would not have had sufficient experience to benefit by a War Course lasting a whole year. The higher study of war cannot be undertaken profitably until the student has learnt the technique of his profession and the practical aspects of staff work. Undoubtedly, it would be an advantage if all Lieutenants could be given a course in Staff work, i.e., in appreciating situations, writing orders, making plans for operations, etc., but a course for the higher study of war should come—as it now does in the Navy—when officers have had experience in command or at least as second-in-command, and, preferably, when they have a practical knowledge of staff work.

There is one most important omission in Admiral Richmond's proposed curriculum, and that is any provision for training in flying and for acquiring experience in naval air work generally. This has not been overlooked by the authorities and now forms an indispensable part of naval training.

The general impression left by this book is that many of the criticisms would have been justified several years ago, but do not really apply to-day. Others, while admittedly sound, cannot be met as easily as the author implies. He deplores the changes of 1902 as not being the outcome of any committee's deliberations, and then proceeds to propose scarcely less far-reaching changes. Many of his proposals, it is understood, have been examined and rejected; others which seemed good in theory have been found impracticable. It must always be borne in mind that any sweeping changes may affect the Service for a great many years before unforeseen ill effects can be righted. A very thorough investigation of all officers' training was carried out recently, and it is noticeable that no change has been found necessary in the main principles. The chief alteration has been the revival of the training cruiser —the advantages of which seem indisputable.

The implication that the products of the system of naval training which has been in force during recent years are helpless and hopeless is far from being the experience of senior officers now serving. The young

officer of to-day is much better equipped to perform his duties efficiently than he was thirty years ago. If there is anything lacking it is more opportunities for him to exercise responsibility and take initiative, and these should occupy the unceasing attention of commands afloat. Much could be done by reverting to the simple signal instead of the lengthy printed memorandum, whereby officers would have to work out details for themselves instead of being "spoon fed." Staff work should never swamp ship individuality. Flag Officers should regard the Captains of their ships as their advisers and the medium for giving effect to their orders and wishes, and at all times restrain their staffs from drafting or issuing unnecessary instructions. This will give Captains far more scope than they possess at present for developing individuality in their officers. At an early stage in an officer's career it may be necessary that he should be trained to conform largely to the "sealed pattern," but the more senior he becomes the more scope he should be given for originality and initiative. Far too many officers get promoted because they have "conducted themselves to my entire satisfaction." There is an undue tendency, to-day, for those in the promotion zone to be ever on guard to do nothing unorthodox lest they should be conspicuous—to their own detriment. All training has two ends in view: the acquisition of knowledge and the development of character; but the latter, which is even more important than the former, is not dependent on training alone. It is the duty of higher authority to encourage officers to emerge from the "sealed pattern" state, to show originality, and not to be afraid to make themselves conspicuous, so long as their enthusiasm and enterprise are aimed at promoting the interests of the Service.

MECHANIZED-MINDEDNESS

By Major L. A. W. B. Lachlan, The Gloucestershire Regiment.

"THE Army Council has determined that as many soldiers as possible must learn to be mechanized-minded. Thus did a "military correspondent" recently introduce an addition to our military phraseology, leaving its meaning to our imagination. Unfortunately, imagination is not a constant quality; in its scope it may be either dangerously fertile or merely futile. Yet between these extremes there lies a mean, which limits the conception of mechanization to the method whereby units can be endowed with greater mobility by the substitution of mechanical vehicles for horsed transport. It would seem, however, that such a conception harbours a fallacy which has arisen from a misunderstanding as to the true meaning of Army mechanization, as well as of the manner in which it must be regarded by the Army.

We must start from the fact that mechanization in the Army is not concerned with transportation alone but embraces the whole field of scientific invention and the adaptation of suitable appliances to war requirements. To think in terms of transportation alone will cramp the imagination, and can only result in the importance of other forms of mechanization being overlooked. Nevertheless, it is true that attempts have been made to differentiate between transportation and the wider aspects of mechanization by the employment of the term "motorization." This the Americans do, defining "mechanization" as "the application of mechanics directly to the combat soldier on the battlefield," and "motorization" as "the substitution of motor-propelled vehicles for animal drawn in the supply echelons of all branches of the Army and in providing increased strategical mobility for units of all types through the carrying of men, animals and equipment in motor vehicles over roads." These two definitions do not clarify the problem. "Mechanization," it will be noted, is reserved for the battlefield, while "motorization" is limited to roads. In fact, their very preciseness leads to confusion of thought, since the link between them is missing. How, for example, should we classify the equipping of an ammunition company with six-wheeled lorries? The unit unquestionably belongs to the

" supply echelon," yet its lorries are often required to leave the roads and to go across country, eventually to deliver their loads at battery wagon lines and even at gun positions. Again, how should we classify the provision of electric cranes or transporters at a base port, where these machines are employed for war purposes that are not directly concerned with the soldier, the battlefields or with roads. It will be seen that it is difficult to depart from the full meaning of " mechanization " without risking confusion of thought and the growth of narrow-mindedness.

First of all, then, it is desirable to arrive at a clear definition of the term " mechanization," and it is suggested that " mechanization " means " the modernization of all branches of the Service by an intelligent adaptation of scientific inventions to warlike purposes."

The next step will be to define the term " mechanized-mindedness." In doing so it is essential to remember that, although circumstances prohibit the adoption in peace of the full variety of technical equipment, which may be available on an outbreak of war, it is nevertheless the responsibility of the Army to study the progress of civil mechanization so that it may be in a position to make the best use of the scientific equipment which may some day be placed at its disposal. It is suggested, therefore, that the term " mechanized-mindedness " may be defined as " the cultivation of the mental qualities necessary to take advantage of mechanical and scientific developments in such a manner as will secure the highest possible degree of efficiency in war." With the two above definitions as a starting point it is possible to indicate the main factors which should guide any contemplation of mechanization in the Army.

Some military writers, inspired by an over-fertile imagination, have presented us with visions of battlefields covered by swarms of mechanical vehicles. Contemptuously ignoring the warnings of their less professional colleagues, these writers have painted their pictures with a complete disregard for the targets their armies would offer to the air, while they have cheerfully overlooked the fact that the number of petrol tankers, necessary for the maintenance of their armies, would, sooner or later, cause such congestion at the bases as to enforce immobility on the battlefield. Reason should warn us that mechanization is a means to an end and not an end in itself, that scientific progress must be harnessed to the Service and not allowed to dominate organization indiscriminately. Let us remember that, although it may be possible to manufacture endless forms of mechanical appliances, no article of warlike equipment can have any value if its use fails to assist the soldier in battle. It is not for the scientist or the faddist to force all his inventions on the soldier; rather is it for the soldier first to indicate his requirements. On the other hand, it is the duty of the soldier to intimate clearly the limitations

which battle conditions will impose on design. Hence the necessity for the soldier being " mechanized-minded."

The basis on which the soldier can make his demands and the method by which he can successfully determine between the adoption of one scientific invention or another may be questioned. Changes in equipment tend toward fresh developments in tactics and organization; and this process must react on the conditions which the new equipment has to satisfy. On the other hand, there is so much that is unchanging in war, that the answer is simple. The soldier must turn to these unchanging factors and, before adopting any new form of mechanization, set them in the scales against any theoretical advantages which he may have seen through the tinted spectacles of enthusiasm. Such a study may not only curb the over-fertile imagination but it will also remind us that the characteristics and purpose of all units must be considered before deciding upon the manner in which their fighting efficiency will be enhanced by the adoption of new mechanical devices. Thought alone, however, is not sufficient; it is imperative that all new inventions should be subjected to most comprehensive tests, since tactical and mechanical progress cannot be separated; so that as long as serious defects either in manufacture or in design may come to light and cripple tactical progress, little advance in mechanical equipment can be made. Consequently, the rate at which a unit can be mechanized is often slow, and it is only by the expenditure of time and trouble that the highest degree of perfection can be attained without the test of war.

Other factors also affect not only the rate at which units can be mechanized but the whole policy of mechanization. The soldier must be thoroughly conversant with these factors and appreciate the effects which each exerts on the problem before he can claim to be " mechanized-minded." First of all there is the role of the Army in peace, often virtual police work. For such duties the use of mechanical appliances is often unsuitable. In addition, the Army at home has to train the personnel for the peace Army abroad, and the mechanization of a unit at home, no matter how desirable, has therefore to be considered in this light. Furthermore, it should be realized that India pays for the whole cost of British units stationed in India and may be unwilling or unable to bear the cost of mechanizing a unit, particularly if the result is unlikely to enhance its fighting efficiency from an Indian standpoint.

On the other hand, there is the role of the Army in war. This demands that it shall be capable of operating in almost any part of the world. It thus becomes easy to visualise a theatre of war in which armoured fighting vehicles could be used to a limited extent only, or where the use of mechanical transport might be impracticable. For this reason it is

imperative that a proportion of our small expeditionary force should remain capable of being so equipped and organized as to enable it to operate under such conditions.

Opposed to these two conditions there is the horse problem, which, owing to the world shortage of light draught horses, is becoming serious. The main horse breeding countries of the world are no longer producing the type of horse with which we have equipped our horse-drawn vehicles. Thus we shall be forced, whether we like it or not, be substitute machines for horses wherever possible.

Lastly, there is the financial factor which militates in a number of ways against the rapid mechanization of the Army. Although the initial cost of mechanization may not appear great, and even when an apparent saving may be secured by the mere substitution of machines for horses, most forms of mechanization entail consequential expenses. Take, for example, the conversion of a cavalry regiment into an armoured car regiment. Obviously the saving on horses can be set against the cost of the armoured cars, but the fact that stables are seldom suitable as garages introduces an expense which at first sight is not necessarily apparent. It will be appreciated therefore that mechanization may entail an indirect heavy capital outlay. The mechanization of artillery provides another example. To produce a suitable tractor with which to tow a field gun is not enough. The gun itself, originally intended for horse traction, was designed to travel at a far slower pace than is attainable with mechanical traction. This necessitates some minor alterations. Even the mere purchase of new equipment must be fraught with difficulties. Owing to our military system, contracts to manufacturers can be made on an annual basis only, while cash payments have to be made from a varying income. From a business point of view this system tends to keep the cost of production higher than it need be.

The problem of war production must also be faced. It is obviously impracticable to maintain government factories capable of producing all Army requirements on a war scale. For war production we must rely on civil manufacturers whose plant is designed to meet civilian needs. If then it is decided to introduce into the Army a machine which does not closely adhere, at any rate in basic form, to some commercial type, the manufacturer first has to build special plant and provide special tools for its output. Nor is this all. What is even more important is the fact that the installation of special plant, in sufficient quantity to cope with the demands of mass production, after mobilization, would cause much delay, just at a time when inability to meet the demands of a field army might entail very serious consequences. Concomitant with manufacture is the problem of spare parts. Not only is it essential to

adhere, as far as possible, to standard designs, but in view of the vast quantities which will have to be provided and handled in war, it becomes essential to keep the variety of designs down to the lowest possible number.

Such are the main conditions which the "mechanized-minded" soldier must carefully consider before attempting to decide whether or not some new form of mechanical or scientific invention can usefully be introduced into the Army. In this connexion it may be of interest to examine a few actual examples in order to establish how far the fighting efficiency of troops can be increased or diminished by mechanization.

(1) Mechanization impaired the efficiency of the cavalry machine gun squadron. Cavalry Training, Vol. II, states:—

(*a*) Sec. 62(1). "The machine-gun squadron furnishes the greater part of the fire power of a cavalry regiment"; and

(*b*) Sec. 66(2). "The transport should be able to bring the guns close up to the fire position and to remain near by them."

This proves the importance of transport which can always be relied upon to fulfil its purpose. But lorries cannot always traverse ground which presents no difficulty to horses. Accordingly, it would seem that mechanization may lead to the loss of fire support at a critical moment or its reduction in value.

(2) The value of armoured cars in war is obvious, but their design is a matter for much forethought. Our latest type of car weighs about 8 tons, which means that field squadrons, R.E., should hold bridging equipment to carry that weight, consequently increase in weight in a new type should be avoided. Then what of India? Can these heavy cars operate in the Zhob Valley, and is their ground clearance sufficient to negotiate that rocky terrain? Would not a lighter car meet all our requirements?

(3) A small and inconspicuous tractor instead of a string of conspicuous and vulnerable mules would enable light artillery to support the infantry with greater efficiency. On the other hand, the psychological aspect is worthy of consideration. Infantry require quick and effective support. Might not this be secured satisfactorily if infantry were given their own weapon? Here is a case in which mechanization might be directed into new channels and efficiency secured by introducing a new weapon into a new arm instead of merely enhancing the value of that already existing.

(4) Many methods of mechanizing the field artillery have been tried. But the use of a universal type of tractor throughout that arm must be

the most economical way of attaining the greatest efficiency. To carry guns in lorries is analogous to carrying cavalry machine guns in transport which cannot always reach the best positions.

(5) The provision of artillery support for tanks supplies an interesting illustration for, in spite of what is laid down in F.S.R. Vol. II, Sec. 66(8) and Artillery Training, Vol. III, Sec. 8(21), it was many years before it was properly realized that the only satisfactory method of ensuring adequate support was to mount the supporting weapon in a tank. May it not be asked whether true "mechanized-mindedness" would not have saved much expenditure of time and money?

(6) In considering the case of the Engineers a wide field is offered for speculation; we range from huge trench diggers to small electric tools. Sappers would no doubt like to possess a comprehensive set of mechanical tools at their disposal. But, when considering the provision of appliances which are not self-propelled, it is essential to calculate the need for keeping transport down to a minimum. The demands of the Sappers must therefore be carefully examined to ensure that they are based on genuine necessity, and the degree to which Divisional Engineers can be mechanized will have to be kept within strict limits.

(7) Finally, there is the problem of recovery and repair, ranging from the repair of the most delicate instruments to the salving of the heaviest tank. Here, however, it is sufficient to refer to what has already been said in favour of reducing the number of types of appliances in the Army, together with their concomitant number of spare parts, in order to lay emphasis on the fact that each adoption of a new type of mechanical appliance adds to the already heavy burden of the repair organization.

MAN MAINTENANCE

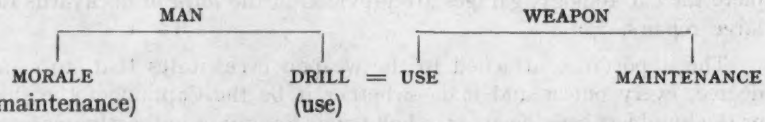
By Lieutenant G. M. Bennett, R.N.

"The armed forces of the Crown do help in producing good citizens. We do not consider that the training of sailors, soldiers, and airmen ends when they have been taught to use their weapons efficiently. We try to teach them something of the great ideals which form the foundations of British character, the stimulus of British action, and the spirit of chivalry. Guidance in these matters is particularly essential, because the Services have become so mechanical of recent years that we are in danger of losing touch with humanity and, in striving for perfection in the machine, we are apt to lose sight of the man, his instincts, his limitations, and his potentialities."—Air Marshal Sir Robert Brooke-Popham at the Royal Academy Banquet, 1933.

IT is an axiom in the three Services that: "Success in battle depends more on moral than physical qualities. Neither numbers, armament, resources, nor skill can compensate for lack of courage, energy, determination, and the bold offensive spirit which springs from a national determination to conquer." In simple words this is a statement that the human factor is of greater importance in war than the mechanical.[1] If evidence be needed to support such an assertion it is but necessary to quote two wars of the present century. In the Russo-Japanese war the opposing fleets were nearly equal in numbers; and while the Russian resources were unlimited, the Japanese were limited to a critical degree. Yet the Japanese obtained the victory by the display of human virtues which their enemy lacked—namely energy, determination, and a bold offensive spirit. In the Great War the Allies secured victory at sea, not by the possession of a fleet greater in size than that of their enemies, but because the morale of the Grand Fleet withstood the strain of four years of warfare whilst that of the High Sea Fleet collapsed. There is also the self-evident fact that, whereas men can fight without weapons, it is certain that weapons will never fight without men, unless the problematic production of a true robot be seriously considered.

[1] This statement requires qualifying to the extent that, under modern conditions, superior morale cannot be regarded as a reliable substitute for inferiority in weapons, especially as regards range, accuracy and power to inflict damage.—Editor.

Although these general principles are applicable to all the Services, this article is concerned mainly with its application to the Navy. In broad terms it may be said that the ability of the Navy to perform its duties both in peace and in war depends on the efficiency of its men and its weapons. As regards the latter its principal concern falls under two headings—maintenance and use.[1] In the case of the men, efficiency can also be divided under two headings. The first of these is morale, which is an essential characteristic of the type of man who is, to the highest degree, fit to use his weapons. The second is drill, which cannot be entirely divorced from the weapon, since it implies equipping the man with the experience and knowledge which will enable him to use it effectively. So we have :—



Of the four main factors thus deduced one is common to both the men and the weapons. In fact, drill may be considered as the " use " of men. One factor, maintenance, is entirely concerned with weapons, and one, morale, is entirely concerned with men. In the following brief survey of the manner in which the Navy undertakes its duties as regards men and weapons, the existence of the common factor " use " makes it necessary to consider it only under one heading, in order to avoid duplication.

Maintenance and Use of the Weapon.

The weapons of a fleet are the guns and torpedoes of its ships, and the machine guns, bombs, and torpedoes of its aircraft. For administrative and technical reasons, the organizations which maintain, use, and propel these weapons are divided into groups termed Gunnery, Torpedo, Engineering, Fleet Air Arm, and so forth. Since it deals with the ship's principal weapon, Gunnery will be taken as an example, though the same principles apply to all groups.

Now, the man who buys a motor car obtains with it a book of instructions, which gives him details of the peculiarities of that particular make; firstly as they affect driving, and secondly as they concern the maintenance: for example, where and when to lubricate it. Assuming that he has already learnt how to drive and has some knowledge of the essential parts of a car, he should, with a little experience,

[1] Development, with which is included experiment, can be omitted for purposes of the present argument.

be able to use and maintain this particular car, including the execution of small repairs; for large repairs he will fall back on a reliable garage. Similarly with the gun. Being a highly complex piece of mechanism, it is, in the first place, constructed and installed in the ship by a firm which specializes in such work, or the finished article may be placed in position by the shipbuilder. From then onwards the Gunnery Officer, together with all that part of the ships complement which comes within the scope of the gunnery organization, are expected to use and maintain the gun armament. Accordingly these officers and men are first given a general training for that purpose. Thereafter, faced with a particular type of gun, they are able to obtain a comprehensive handbook detailing its peculiarities, both as regards its use and its maintenance. To complete the car analogy, garages are provided in the form of dockyards for large repairs.

The importance attached to the weapon necessitates that, to some degree, every officer and man—whether it be the Captain of the ship or the humblest breechworker—shall have, directly or indirectly, received training in its use. Its complexity as a machine necessitates a more intimate knowledge of its construction and work on the part of those who will be responsible for its maintenance and for executing "running repairs." For these there is the appropriate handbook.

Maintenance of the Man.

It is the primary object of all training to produce men who, to the highest degree, are fit to use their weapons. On joining the Navy, a lad is sent to a training establishment and there turned into an officer or seaman for the fleet. As with the gun, so with the man: the object is that the ship shall be presented with the finished article. True, the man cannot be regarded as incapable of development—like a gun made to a specified design—but at least he comes to his ship with the essential requirement of good morale, his early training having been designed to that end. The duty of the ship, as far as it concerns this factor, thus resolves itself into maintenance; in this respect, therefore, there is a direct parallel between the man and the weapon.

As it is the duty of every officer to maintain the weapons under his charge, so it is his duty to maintain the men under his command; the upkeep of his own morale being a natural corollary. Is he provided with the necessary training to enable him to perform this duty and, if his knowledge should require refreshment, is there any book to which he can turn?

The maintenance of morale necessitates leadership. The born leader being a jewel of rare price, the normal need is to develop leadership by

various means. At every point in an officer's training this is considered and endeavours are made to give it practical effect; at sea, particularly, opportunities are given the young officer to take charge and assume responsibility in order to improve his qualities of leadership. He is, in fact, taught the practice of maintaining morale, which should on no account be confused with its theory.

On the theoretical side every officer, before receiving his commission, completes a fortnights[1] Divisional Course at the Royal Naval Barracks, Portsmouth, during which he receives one or two lectures on psychology. But, if he wishes to revise or increase his knowledge of morale, he will find no more than five pages on the subject in a single official publication. Such are the facilities now afforded to officers to provide them with this essential part of their equipment.

The Case for a Wider Study of Morale.

It is accepted that man is more important in war than the weapon, and that morale is the most vital factor in his character. Furthermore, it has never been disputed that man is more complex than any machine. It follows, therefore, that the training provided to enable an officer to carry out his duty of commanding men should be commensurate to, if not greater than, that provided to enable him to use and maintain weapons. But, is it? Are five pages on morale in one little book seriously to be compared with the abundant wealth of literature on every type of weapon with which the fleet is supplied? Are two lectures on psychology in the Divisional Course seriously to be compared with the months spent in the study of weapons? Is the training in leadership, i.e., the practice of morale, which is given to an officer at various stages in his career, really the best which can be devised?

Before attempting to answer these vital questions, let us recall that British naval history of the last decade can furnish more than one example of failure in the maintainance of morale. It follows that the training given to officers in either or both aspects of man maintenance is capable of improvement. Should this improvement be on the theoretical side, or on the practical, or both?

Reverting again to the parallel of the weapon; if at any time the stated method of maintenance for a particular type of gun is proving generally ineffective in its object, the Navy, both ashore and afloat, is provided with a corps of experts who are able to consider the failure of this maintenance. Firstly it is considered from a theoretical aspect by

[1] The course for Acting Sub-Lieutenants is officially of one month's duration, but a fortnight is spent at the Signal School.

which the necessary improvements are devised; next these are put into practical form for the use of the men concerned with the maintenance. If, therefore, the Navy's ability to maintain the morale of the men is questioned, it follows that the officer's training for this duty requires review. And it is suggested that this review can only be effectively carried out with an expert knowledge of morale, gained not only from practical experience, but from its study as a branch of psychology.

This article does not set out to answer the third question enumerated above, but it is hoped that enough has been said to justify the assertion that the theoretical study of morale is neglected in the Navy. If that study is neglected we are provided with no effective means of considering the cause of any failure in man maintenance. This is, perhaps, a sweeping statement, and requires one qualification. There is no doubt that many senior officers are students of morale, but the point pleaded here is that there are still many who are not, while it is almost entirely overlooked among those more junior. These latter, indeed, seldom get further than the blind acceptance of elementary facts, such as the importance of a sailor's food, for example, which has become almost a matter of routine. As Admiral Richmond says: "Rigid adherence to custom takes the place of reason . . . and a gradual decline takes place in consequence of blindly adopting maxims without any examination of the principles upon which they are founded."[1]

The author is in danger at this point of being confronted by historians with the argument that there is no historical precept for his view. In reply to this, it is suggested that it is only in the present century that the weapon has gained its ascendancy over man, and also that fifty or more years ago morale was studied to a greater extent than it is now. A *Naval Cadet's Manual*, published about 1860, in the possession of the author, contains more practical hints on maintaining morale, with theoretical justification, than any present-day handbook.

The case for a wider study of morale having been presented, it now remains to show that it can be studied, to suggest a practical plan for instructing officers in it, and finally to show the practical use of this study at sea.

The Study of Morale.

In the first place, morale is not purely a naval affair. The other Services are equally concerned with it; indeed, the whole nation, to a greater or lesser extent, is affected by it in every form of organization. Morale, therefore, can be studied from a general point of view as an

[1] "Naval Training."

integral branch of the science of psychology. On the other hand, in so far as the Navy is concerned, morale and its maintenance is a special branch of its general study. In fact, any serious study of naval morale requires firstly a knowledge of psychology, and secondly a knowledge of the Navy. The author of this paper has had a limited number of years experience at sea, but he claims no theoretical knowledge of psychology. In order to study the theory of naval morale, therefore, he has had to fall back on the five pages in the official publication already referred to. This authority deals with morale under six headings, and under each of these enumerates certain factors which in practice affect them. The following table sets out the relevant contents of this treatise; the six headings being those numbered from 1 to 6. :—

FACTORS AFFECTING THE MAINTENANCE OF MORALE.

(1) *Physical.*
Physical and Recreational Training; Sport; Baths; Mess-decks; Food; Kit and Hammock Inspection; Bedding aired.

(2) *Patriotism.*
Visits to Empire Overseas; Lectures on Empire; Visits of Royal Family to the fleet.

(3) *Esprit-de-Corps.*
Team-work at (*a*) Work, (*b*) Play; Lectures on the Navy; "Pride in the Navy" propaganda; Competitions.

(4) *Discipline.*
Drill; Dress; Punctual Routine; Respect for Officers; Equipment and Quarters.

(5) *Leadership.*
Instruction and Training of Subordinates; Practical handling of men; Interest in welfare; Enthusiasm for Service; Example of superiors.

(6) *Organization.*
Direction centralised; Command de-centralised; Divisional System.

(7) *Recreation.*[1]
Leave; Sport; Home life; Entertaining in ports visited; Hobbies; Lectures; Concerts.

(8) *Conditions of Service.*
Pay; Pensions; Advancement conditions.

(9) *Religion.*
Chaplains; Sunday; Daily Prayers.

FACTORS TO BE AVOIDED IN MAINTAINING GOOD MORALE.

(1) Fatigue.
(2) Lack of confidence in weapons.
(3) Monotonous service.
(4) Forced inaction in war.
(5) Seditious propaganda.
(6) Destructive criticism of operations in peace or war by persons in authority.

[1] Recreation is here meant in its widest sense; not only in the form of physical sport.

Three more have been added by the author—numbered from 7 to 9. This sub-division is based upon a study of psychology. A knowledge of the Navy enables a number of factors which affect these headings to be placed under them in the table. In addition a number of factors, which have an adverse effect upon the maintenance of morale, have been added.[1]

Consideration of this table would seem to lead to the conclusion that a study of naval morale resolves itself into :—

(1) Consideration of the tabled factors in order to apply them in practice with the greatest benefit.

(2) A review of the factors in order to add or subtract from them as experience may show is necessary.

(3) A review of the practical application of these factors to ensure that each is receiving its due share of attention.

(4) A decision as to their relative importance.

The first suggested requirement for the study of morale to be introduced effectively in the fleet is the formation of a small committee, e.g., one Captain as president, one Commander, one engineer officer, and one R.M. officer, with an accountant officer as secretary. Before commencing their duties these five officers should be given a course in psychology; perhaps two months at a university would suffice. On conclusion of this course their duties would be :—

(1) To review naval morale from every angle; but principally in the light of their study of psychology and of their practical experience at sea.

(2) To produce a handbook for the fleet which would include an analysis of morale and its maintenance, and a list of every factor affecting it, with detailed practical remarks on how to carry them out.[2]

On completion of these duties this committee would remain in being. Nominally it would sit at the Admiralty, acting in close co-operation with

[1] It is not claimed that this table is by any means complete. It is suggested, however, that the factors enumerated under headings Nos. 7, 8 and 9 at least indicate that there are other matters besides those included in the official treatise which merit study. For instance, religion is surely justified by the first Article of War, while who will dispute that leave and pay, which come under the headings of Recreation and Conditions of Service respectively, affect the morale of the sailor?

[2] In a lecture by Brigadier A. P. Wavell on "The Training of the Army for War," published in the JOURNAL of May, 1933, when alluding to the study of psychology, he remarked "we have a manual on 'Animal Management'; is not 'Man Management' just as important?" In the ensuing discussion the pro-

similar committees at the War Office and Air Ministry. The officers constituting these committees would always be chosen for their suitability and wide range of service of every kind, and before taking up an appointment to one of these committees, would always undergo a course in psychology.

Arrangements would be made for every officer of the equivalent rank of Acting Sub-Lieutenant to be given a proper course of study in naval morale under the personal direction of a member of the Naval Morale Committee. This course, besides covering all the ground in the handbook by lectures, would include practical training where possible in its application.

A further practical suggestion is the provision of lectures on morale in the Senior Officer's Courses by the President of the Naval Morale Committee.

These suggestions, while not increasing the time spent in the study of man maintenance to anything commensurate with that spent on the study of weapon maintenance, will at least ensure that it receives its proper attention, and that, in future, the man will not be crushed by the all-conquering machine. Finally, it may be added, in these days of economy, that these proposals do not appreciably add to naval expenditure.

Practical Results.

It will be seen that the proposals outlined above would eventually ensure that all officers will receive a course of training in morale. The Committee, having in the first place supplied a handbook on the subject, would, in conjunction with senior officers afloat, carry out continuous work on the lines already indicated. It would be the duty of every officer to put his knowledge into practice, in the sense that any officer commanding men, from the Captain of a ship to the Lieutenant of a division, would be guided by their study of morale. This study, started during their initial training, would be similar to that outlined for the

duction of " another book " was deprecated, and it was maintained that " every regimental officer, if he is worth anything at all, has worked with men ; and if he has not learnt after a year or two how to manage men he never will learn."

The author would suggest, however, that there is greater truth in the Lecturer's reply : " Undoubtedly one learns to manage men to a certain extent in peace, but the psychology of the soldier in battle and how he behaves in battle is something we cannot learn in peace. It can only be learnt by experience. Yet knowledge of that kind is to some degree slipping away from us as experience of the war is fading. But it can be learnt to a certain extent by reading."

Surely it would be worth adding one book on " Man Maintenance," even if we scrapped a dozen on " Weapon Maintenance."

Committee. The handbook, revised as necessary from time to time by the Committee, would furnish the essential guidance.

From a general outline of the working of the proposed scheme we may turn to a few examples :—

(1) As an illustration of the relative values of factors affecting morale, there is the tendency of outside affairs in the last ten years to belittle the Navy, which emphasizes the necessity for " Pride in the Navy " propaganda within the fleet itself. This is much more urgent now than it was in the immediate pre-War days.

(2) Drill, in the particular form of field training, is a vital force in inculcating discipline and leadership, with which object it is given so much importance at Whale Island. Elsewhere, and particularly at sea, there is too often a tendency to ridicule it as " gas and gaiters " ; certainly it is neglected at sea. It is considered that study of morale would ensure that field training was restored to its proper position as a valuable training force at sea.[1]

(3) When ships visit foreign ports or British seaside resorts, officers too often forget, in the wealth of hospitality offered them, that the men, too, should be entertained. The suggested study of morale would show that such entertainment is a factor in its maintenance which should not be overlooked.

(4) Sport, being considered under the headings of both physical fitness and recreation, would perhaps be a step towards the reduction of that fetish of the present fleet, which can only be called over-organized sport.

(5) Last, but not least, a proper study of morale would ensure that interest in man maintenance is kept alive, which, in turn, would defeat the ever-present danger that the influence of the machine will dominate the importance of the man.

[1] " The adage that idleness is the root of evil is with no people more clearly shown than with sailors and soldiers. Motion preserves purity ; everything that stagnates corrupts. When you have nothing more to do, let them be exercised at small-arms ; it makes the men straight, gives them an easy and graceful motion of the limbs, shakes off the awkward clown, and gives that military air which shows a man to advantage."—Kempenfelt to Middleton (" Discipline of a Fleet ") in 1779.

THE OFFENSIVE IN FUTURE WARFARE

A FRENCH VIEW [1]

THE principal problem confronting authorities responsible for national defence at the present day is that of restoring to any strategic offensive movement the capacity for mobility which the Great War seemed to indicate it had lost for ever. The problem arises from two well-defined general causes :—

(1) Strategic—due to the apparent impossibility of securing surprise in the face of modern air reconnaissance ;

(2) Tactical—due to the fact that modern science and inventions favour the defence at the expense of the attack.

These conditions, of course, are applicable only to belligerents who are more or less equal in numbers, armament and leadership.

A preliminary but detailed study of the potentialities of the air arm, from the aspect of the defence, encourages the belief that the defence *must* be in possession of a competent air force if it is to succeed in its task. Having arrived at this conclusion the next step is to carry out a threefold enquiry to ascertain :—

(i) What is the real offensive value of modern armies ?

(ii) What is their capacity for obtaining of strategic surprise ?

(iii) What is the potential value of an air arm to secure a decision in modern war ?

Before attempting to answer these questions it is necessary to analyse certain aspects of modern war as follows :—

1. *The offensive value of modern armies.*—On the strength of the lessons of the Great War it can be assumed that the superiority of the defence is to be ascribed to the following :—

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[1] The following pages are a summary of a series of four articles which appeared in the *Revue des Forces Aériennes* for August, September, October and November, 1932. These were signed " General A." It has been freely stated and, apparently, never denied that this pseudonym is that of General Armengaud, *Inspecteur-Général-Adjoint* of the French air forces and member of the *Conseil Supérieur de la Defense Nationale*. In any event the importance of the views expressed is self-evident.

(*a*) Invisibility;
(*b*) The defence is better able than the attack to protect itself against modern weapons;
(*c*) The co-operation of the various arms and a timely combination of battle plans is more easily secured in defence than in attack.

Admitting these data to be correct, it has to be considered how far conditions may alter their applicability to future warfare.

Now, visibility into an enemy's dispositions is obtained either by terrestrial observation or by air reconnaissance; and as long as the defending belligerent in war is able to select his own terrain for battle, so long will the advantage of terrestrial observation remain in his favour. The attack will generally have to fight for its acquisition. It follows then that the attack will depend chiefly on air forces for a better insight into the hostile dispositions. Consequently, surprise in future warfare will depend on the efficiency of the air forces engaged—at any rate during the opening stages of a campaign. Nevertheless such an advantage in the air may now not be acquired with certainty, even should the attack employ heavy, armoured, aircraft. It has to be remembered that invisibility against air reconnaissance is being sought by every possible method; and in any case the attack must remain at a disadvantage to the defence in the attainment of absolute concealment. Moreover the attacking side may not be able to concentrate a sufficient force of fighters for these offensive purposes, if it has to provide any number of such machines for home defence or other independent missions.

2. *The vulnerability of either side.*—The next question arises as to how the attack may diminish its own vulnerability whilst enhancing that of the defence. To this end the attack can employ tanks, artillery and low-flying aircraft. But these weapons suffer from appreciable disabilities, mainly those arising out of difficulties of terrain—woods and forests for instance—or out of failures of ammunition supply (probably a critical matter at an outbreak of war or in mobile operations). The tank also depends largely for success on the absence of anti-tank armament on the front of attack, while the low-flying aircraft remains a formidable anti-tank weapon. In short, tanks, if accompanying infantry in an attack and moving at infantry speeds, might almost be regarded as attempting suicide.

The best defence against tanks is really a disposition in depth; similar methods of defence are the correct reply to overwhelming artillery fire, even when the latter is employing a high proportion of gas shell. Consequently, the best support for an attack is the low-flying aeroplane. On the other hand, it has to be remembered that the most vulnerable targets presented to such aircraft are attacking troops.

The general conclusion is that the attack must, on the whole and in all probability, remain the weaker operation of war.

3. *The co-operation of the various arms.*—In this respect, also, the attack may be regarded as the weaker operation, since it cannot be conducted on so elastic a plan as the defence; communications alone favour the latter to the disadvantage of the attack. That is the lesson not only of the Great War but of recent French manœuvres. Moreover, the further the attack penetrates the defence, when the latter is disposed in depth, the greater will its difficulties become. Proof of this state of affairs will be found in the changes recently made in the composition of the French cavalry division. Since 1914 its effective strength has been altered as follows:—

	1914	1932
Sabres	6,000	3,000
Bayonets	400	6,000
Machine guns	6	500
Guns	12	36

Such changes mean that the defensive value of the division has grown out of all proportion to its offensive power.

The position may be regarded thus. Sooner or later every operation will degenerate into a frontal attack, with the result that the defence remains the stronger. Accordingly, it becomes necessary to study independent air warfare and to consider how far this form of war may be able to secure a decision, the more so since it appears probable that the use of aircraft in support of land forces can only be regarded as a method of ensuring such a degree of strategic surprise as land forces are still able to obtain.

But, to probe the question yet deeper, how far can a liberal use of aircraft secure a tactical surprise for the attack; that is how far can it prevent the defence from bringing strategic reserves into action at the important points in useful time? The conditions conducive to such a result are the following five:—

(i) *The correct disposal of the attacking forces.*—This must depend on the insight that the attacking commander has gained into the dispositions of the defence, as well as his knowledge of the terrain over which he is to fight. In the face of modern defensive and anti-tank technique the map alone must be regarded as valueless for the last-named purpose. Aerial photography is better situated, but is not faultless as the events of 1917 well show. Secret agents can no longer be relied upon in mobile operations. Reconnoitring detachments failed in 1914; and, although greatly strengthened since that date, do not promise to yield much

better results to-day in view of the much enhanced power of the defence. The reconnaissance of the future, then, may not be capable of penetrating more than the crust of the defence.[1] Again, independent air reconnaissance is not likely to be much more effective than in 1914 now that concealment and camouflage are so well understood. The best results would seem to be obtainable from a skilled combination of ground reconnaissance and aircraft.

Aircraft, however, should be better able than before to locate enemy rail and tank movements, particularly when carried out by day. The movements of troop reserves, stores and ammunition remain the surest indications of the enemy's intentions. But to fulfil tasks of this nature the reconnoitring aircraft of the future needs some constructional development on appropriate lines.[2] Still more important does it become to adopt the most suitable plans of concentration, and then to employ in the most profitable manner all the available aircraft at the moment of mobilization. The temptation to squander aircraft on side-issues must be resisted at any cost.

A review of the situation leads to the opinion that the total result of air reconnaissance in mobile warfare of the future will not prove very different from that obtained in 1914; while in static warfare against an enemy strategically on the defensive the best results will be mainly limited to those achieved by aerial photography, and even these may prove of no greater value than of old.

(2) *The paralysis of the hostile reconnaissance.*—In 1914 the defender was able to acquire the better intelligence of the hostile movements; and this condition is likely to continue so long as troop movements enter into the plans of the attack. Yet the enemy's weaknesses, such, for instance, as the gap that arose between the German First and Second Armies on the Marne in 1914, are more likely to escape detection. In fact, it does not appear that it may be possible to paralyse the defending air reconnaissance; its advantages are too many—provided always that it be of some weight and possess some efficiency.

(3) *The speedy destruction of the hostile anti-aircraft ground organization.*—This result is highly desirable in order to permit of the penetration of the hostile defence by reconnoitring forces. For this task armoured ground units will be needed to work in conjunction with fighter aircraft. By such methods it may be that success will be achieved; but in this process sufficient information can be given away, while the result might

[1] The author puts forward some illuminating remarks on the methods and composition of reconnoitring "groups".

[2] Particularly in the direction of the fast multi-seater fighter, possibly armoured. —GENERAL "A".

be obtained at such cost, that the attacker's plan will be revealed. Accordingly the defence may thereby still remain the stronger.

(4) *The rapidity of the attacker's movements.*—This much desired rapidity can be assisted by aircraft impeding the defender's countermeasures by means of long-range attack—especially at an outbreak of war when railways may very largely come into play. The defence will necessarily be driven to meet this form of attack in the air. This, in turn, will entail an instant onslaught by the attack on all the defending air forces, ground organizations and the like.

Even later, during the course of a campaign, air forces will retain this great potential offensive capacity. Since 1914 the infantry division has grown threefold in size; the ammunition supply of a corps has been doubled. True, mechanized supply columns eliminate to some extent the risks of air attack—provided that the road system in use is not rendered too far impracticable for traffic.

The most important conclusion thus emerges that air attack can by this obstruction, if not by a paralysis of hostile movements, ensure a superiority sufficient to secure a decisive freedom of movement: always with the important proviso that the defending air forces have to some extent been crippled beforehand.

(5) *The superiority of the offensive in battle.*—This superiority is, in fact, little more than that which springs from the freedom to use reserves in battle. Again, so long as the opposing sides remain roughly equal, the power of the air weapon on either side will be much the same, as has already been described. In the event of a pursuit the air arm will assuredly become the most potent instrument of the attack—particularly if employed in conjunction with armoured units.

The general conclusion to be drawn from these five headings is that an air force, when employed in purely land warfare, can only develop its full power *after* it has won a victory in its own domain against its own particular enemy.

The next step is to examine whether air forces are better suited to attack or to defence. The answer to this question depends on three circumstances:—

(*a*) The respective value of the individual aircraft both in attack and in defence;

(*b*) The respective value of the opposing air forces, regarded as a whole, both in attack and in defence;

(*c*) The degree of surprise that might be obtained from technical developments and organization.

To treat each of these in detail.

(*a*) The perceptible improvements in modern military aeroplanes tend more and more to bring about the supremacy of the attacking bomber, since it is rapidly growing larger, faster and better armed. The fighter appears rather to be nearing some degree of finality. Moreover, if armoured, the bomber will become less vulnerable to fighter attacks; and there would seem but little possibility of constructing fighters that can carry some form of free-moving ordnance capable of dealing with even a partially armoured bomber. The small target offered by the fighter will be of little avail.

(*b*) The attack is greatly favoured by the "three-dimensional" freedom of movement which it enjoys; in addition, since the air cannot be "occupied" the defence must remain at the mercy of the attack. Even in the case of targets situated far back in the defender's country, there exists no guarantee that the defence could intercept a really well-managed attack. Bad weather, it is now certain, can no longer be regarded as a sure obstacle to attack; on the other hand, it may cripple the defence. The multiplication of ground defences does not very materially alter the circumstances of the case. A lavish expenditure of force in this direction might ultimately even weaken the power of the defence.

(*c*) The technical development of aircraft is still in a state where unexpected progress is to be achieved. Secret progress in aircraft construction, therefore, might be a means of achieving a considerable degree of surprise: the same holds good in the sphere of strategic organization and plans. Analogous instances of such surprise may be found in the German heavy howitzers of 1914 and the "Long Berthas" of 1918; but in dealing with modern aircraft the openings are far greater.

It may therefore be deduced that aircraft, if employed as an only weapon—indeed as an air force treated as an independent whole—is as ill adapted to tasks of defence as it is peculiarly fitted to duties of offence.

Such a conclusion leads to the next step in the enquiry: this falls into three parts:—

(i) Can an air force obtain decisive results against an enemy air force?

(ii) Can it do so against an enemy ground force?

(iii) Can it do so by attacking the enemy's home country?

Let us take these points individually:—

(i) The destruction of a hostile air force can neither be obtained by air battle nor by attack of its ground organizations.[1] Moreover it

[1] This important opinion is also accepted as an axiom in other countries besides France.

is improbable that a general air battle can be provoked otherwise than exceptionally. Even if it could be brought about, it is not likely that it would be final, although the moral effect would most probably prove far-reaching.[1]

Attacks on ground organizations are more likely to lead to success, since modern aerodromes can scarcely be concealed. This condition seems to point to the necessity for providing two series of aerodromes—one far in rear for resting and refitting the aircraft, the other nearer to the front for operational purposes only.

This argument thus leads to the conclusion that, both for strategic and political reasons, the attack on the hostile ground organizations must constitute the first task of an independent air force on any outbreak of war; the object being to ensure freedom from attack directed against its own country and its own ground organizations, while securing for itself full independence of action.

(ii) An air force can deal most effectively with enemy ground forces by attacking its communications either by bombs or by means of "destruction parties." Such action will be taken in hand immediately on an outbreak of war in the hope that the targets may be found inadequately guarded. Air fighting will in all probability then take place. As soon as one side or another has obtained superiority in the air, it can turn to attacking either the hostile ground forces or the enemy's country as a whole. Anyhow it may be anticipated that these attacks will exercise a profound influence on the entire course of the land operations.

(iii) The choice between attacking the hostile ground forces or the enemy's country as a whole needs consideration.[2] If the attack has been carefully prepared, and when the air weapon is equal to the task, then the whole country may be attacked. But before doing so it is important to reckon with the importance and probable objects of the hostile ground forces. It has always to be borne in mind that ground forces cannot assist an air force in attacking enemy's country, whereas they can assist in the attack on hostile ground forces. The principle of concentration of force comes largely into play in making a decision of this nature.

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[1] The whole question of how and wherefore a general encounter may or may not be expected in the air is discussed at length, while the technical difficulties in the way of establishing contact in the air are brought out.

[2] Contrary to the belief commonly attributed to the French General Staff, General "A" places implicit faith in the effects to be expected from attacking the enemy's country. Indeed he cannot lay sufficient stress on the absolute necessity for such attacks.

The third main problem now arises: Will air forces develop into separate entities whose main constituent will be bombing squadrons?

It appears that this must inevitably come to pass with the growth of the large, heavy, bomber. By the side of the latter type, such as may be expected to appear in the future, reconnaissance and fighter units will in due course play only a secondary role. Bombing air squadrons may, in fact and in the course of time, be multiplied at the expense of land and sea forces.[1]

In the last place it is necessary to consider the higher control of such an air force and its situation in the national defence system. Assuming, as may well happen, that the task of such an air force may come before those incumbent on either land or sea forces, can its control and direction be any longer assigned to a naval or military high command as is frequently advocated to-day? Now, if the view be accepted that the tasks of these air forces lie far beyond the scope of existing sea or land forces, while they may be largely concerned with defence against hostile air forces, then there must come into existence a command that can control all three forces, sea, land and air. Such an office, it is suggested, should be created under the title of "Commander of the National Fighting Forces."[2]

[1] General "A" here panders to the disarmament zealots by claiming that a strong air force is the finest defensive instrument to be placed in the hands of a peacefully disposed country.

[2] "Commandant des Forces Militaires du Pays."

Note—*Details of the latest reorganization of the French air forces will be found in General Service Notes p.*634.

PUBLIC SPEAKING

By "SILURI."

VERY few officers are good public speakers. This is unfortunate, particularly in the case of the naval officer who, even when quite junior, may find himself called upon to speak under circumstances of some variety. Apart from the desirability of being able to hold his own in this respect, there is the personal touch to be considered; and the medium through which this touch is kept is human speech. In saying this I do not mean to imply that the average officer or man responds readily to flights of oratory or is impressed by verbal fireworks, but rather that he finds it difficult to respect an officer who is tongue-tied, awkward and hesitating when speaking in public. Accordingly, the following hints are offered with the assurance that they have been tested and found correct in practice; the justification for reproducing them being the assumption that it is the *duty* of every officer to try and acquire the ability to speak well.

DELIVERY.

Before proceeding, it would be as well to dispose of a small difficulty which arises. By far the best way to gain confidence and skill in this art is to speak in public at every reasonable opportunity. Many people hesitate to do this on the grounds that they may be thought to be "fond of the sound of their own voice." Let such take heart in the reflection that no one holds it to the discredit of the would-be expert tennis-player that he is "fond of banging tennis-balls about."

Breathing.—Without delving into medical details, I understand it to be the fact that the sounds known as human speech are produced by blowing air against the laryngal chords. There are two ways of drawing the necessary air into the body:—(i) Through the mouth; (ii) Through the nose. The latter is the correct way. Air thus inhaled is filtered and warmed—this being the particular function of the nose—and does not upset the larynx when expelled. It is quite easy to breathe through the nose and talk at the same time. Evidence that breathing is incorrect is immediately forthcoming in the shape of hoarseness, lack of breath, and possibly, complete speechlessness. There are two ways of controlling the breathing:—(i) By the chest; (ii) By the abdomen. The latter is the

natural method, is unconsciously adopted when asleep, and is the best for providing an easy and comfortable flow.

Attitude.—The attitude adopted when speaking is important in its effect; firstly on the breathing, and secondly on the audience.

If the breathing is to be unrestricted, the speaker must stand upright. Crouching over a table or desk, as though about to spring into the auditorium, prevents the breathing apparatus being used correctly, and in any case may be entirely out of keeping with the relations supposed to exist at the moment between the speaker and his audience. The chin should be kept up. This assists the breathing, and enables the speaker to look his audience in the eye, which he must do if he is to retain their confidence and attention. Gazing at the boots renders the speech inaudible and gives the idea that the speaker is even less convinced of the importance of his remarks than the audience. Looking at the ceiling as though for inspiration from above takes the voice over the heads of the audience, restricts the larynx, and is in any case probably unproductive of any result.

Apart from standing up straight, there is the general attitude to be considered. Hands in pockets, thumbs in armholes of waistcoat, or leaning up against some permanent structure are tricks to be avoided.

For the ordinary speaker, five main attitudes can be suggested:—

(i) Hands behind back. In this case, the arms *must be kept straight*, and hands still. Otherwise a vulgar suggestion that the speaker is scratching his posterior will be engendered in the minds of the audience.

(ii) Hands clasped in front of the body, arms straight: for a man, rather too "September morningish" as a rule.

(iii) Hands clasped in front of waist-line, arms bent. The hands *must be kept still*, or the "invisible soap" illusion is produced. Notes or papers carried in the hand may assist.

(iv) The "Cabinet Minister," or hands clasping lapels of coat. A very sound and safe attitude for beginners.

(v) Arms folded. This tends to restrict the breathing a little.

The attitude should, if possible, be varied as the speech proceeds.

Gestures.—These should be used sparingly, or a sense of theatricality will be produced. It is difficult to give any specific examples; the best results can be obtained by practice, before a mirror or a long-suffering friend, and anything ugly or melodramatic eliminated. Remember:—

(i) All arm movements must be made from the shoulder, or they will lack grace.

(ii) Do not bang the table, or strike the fist of one hand into the palm of the other, in such a way as to produce a noise. This is a useless method of attempting to emphasize a point, as the essential word or phrase is lost in the clamour.

(iii) Avoid the repetition of mannerisms, such as scratching the head, rubbing the nose, and tweaking the ear.

(iv) If speaking at a dinner, take care that your favourite gesture does not inflict an injury on the neighbouring guest.

Articulation.—Clear and careful articulation is essential. The larynx produces the sounds, and the lips must be used in an almost exaggerated manner to give these sounds a clear-cut character. Take great care of the consonants, the vowels will take care of themselves. Beware of stressing sibilants. Speed is of importance, but gabbling should be avoided. About 110 words per minute is a good average, and this should be practised by memorizing passages of a given length and declaiming them aloud against a stop-watch.

Raise the voice at the end of a sentence. The natural tendency is to drop the voice, and the result is deplorable. Try and pitch the voice to the particular conditions under which the speech is being given, but never shout, as this merely produces an unintelligible roar. So much for the mechanism of speaking.

Speeches.—Every speech consists of three parts: (i) The Introduction; (ii) The Body; and (iii) The Peroration.

An Introduction is essential, as it prepares the minds of the audience, enables them to grasp at the outset the point of view which is adopted, and gives them a clear idea of the manner in which it is proposed to tackle the subject.

The function of the Body of the speech is obvious. Strive to be brief, to use when possible words derived from the Anglo-Saxon rather than the Latin, and above all stick to the point. Appeal to the hearts as well as the heads of the audience, but try and avoid sloppy sentiment, and any suggestion that the speaker considers himself their superior.

The Peroration is not, as many people suppose, merely a summary of points made, or a statement of conclusions reached. These should come at the end of the Body of the speech. It is the final exhortation to the audience, an attempt to give them some "message" to carry away. It should be short, and very carefully thought out, as much depends upon the impression which is left in the minds of the hearers.

The Speaker's Stock-in-Trade.—This consists chiefly of two things:—

(i) An extensive vocabulary, carried in the head.

(ii) A collection of extracts from good speeches, telling phrases, and stories, both serious and humorous. This should be kept in a scrap-book.

A good vocabulary is essential. It has been estimated that the vocabulary of the average educated Englishman contains about 30,000 words. The English language contains over ten times that number. But we seldom make sufficient use of the dictionary, and it is often the case that when reading, on coming across a word whose rough meaning we know, we go no further with it. This is pure mental slackness. Such words should be looked up in the dictionary, and their exact meaning discovered. By this means, and by careful study of a dictionary of synonyms, or Roget's admirable Thesaurus, a good collection of useful words can be acquired. Further, we do not practise the art of good conversation sufficiently in ordinary life. I do not wish to suggest pedantry on the one hand, nor to condemn the use of slang on the other, but there is clearly a happy mean to be struck between the two. In general, we are too slack in our everyday speech.

The value of a scrap-book cannot be stressed too greatly. It forms a useful nucleus for the man who is perhaps not called upon to speak often, or who may be called upon to speak at fairly short notice. To the man who is called upon to speak often it is absolutely essential, and many speakers divide their scrap-books up into sections and index them. This may seem rather a far-fetched idea, but it is well worth the trouble.

The Prepared Speech.—All speeches should be carefully prepared, written out in full, rehearsed aloud and, if necessary, learned by heart. This may seem to be quite unnecessary, but the speaker who can afford to dispense with such aids is so rare that, for practical purposes, he may be regarded as non-existent. Many, unfortunately, do not realise this fact. One may have a clear idea of what one intends to say, but in order to make certain, and in order to decide exactly *how* one is going to say it, the speech must be written out in full. It must then be rehearsed aloud, in order to ensure that there are no awkward phrases, it being borne in mind that the speech is to be spoken not read. These preparations are all the more important because they should safeguard the speaker from the all too prevalent tendency to be verbose. At a rough estimate fifty per cent. of speeches are fifty per cent. too long. It is the concise, pithy and witty speaker who obtains the greater effect.

Opinions differ as to the necessity for learning a speech by heart. Many people repudiate the suggestion, either on the grounds that they are incapable of learning anything by heart, or that a speech learnt by heart must lack fire, and become a passionless recitation. To these objections I would reply that a good memory is part of the equipment

of any speaker. There are many methods of learning a speech by heart, which the individual should try out for himself. In any case it is quite in order to arm oneself with notes to aid the memory. On leaving a theatre after witnessing a play in which some eminent actor has appeared, one never hears the remark : " A magnificent performance, but it would have been *so* much better if he hadn't known his words."

In short, a speech must be delivered, and not recited, and requires the same type of skill as that displayed by an actor in " putting over " his part. As already remarked, theatricality must be avoided. No *good* actor is theatrical on the stage, and very seldom in private life.

For the novice, at any rate, I would strongly advocate learning the speech by heart. For the more hardened performer this may not be necessary, but is probably done sub-consciously. In either case, notes may be used. These should consist of key words or phrases, written out in capital letters. Cards are better than sheets of paper, as they are more easy to handle. If possible not more than two cards should be used, as the speaker may get a little muddled, and give the impression that he is shuffling a pack preparatory to forcing an ace of spades on some unsuspecting member of the audience.

The " Impromptu " Speech.—I use inverted commas, because in my view no such thing as an impromptu speech exists. The practised speaker should never attend any gathering at which there is the slightest chance of his being called upon to speak without being prepared to do so. In fact, all the best so-called " impromptu " speeches are very much more carefully prepared and rehearsed than those shown on the programme. This is the highest form in which the art manifests itself, and it clearly requires much skill to deliver, apparently on the spur of the moment, a speech which in actual fact has been prepared with the most meticulous care. It is here that the scrap-book is invaluable, as the speaker, knowing the type of function which he is about to attend, can equip himself with an effective contribution to the general enjoyment.

Occasions do arise when an absolutely unforeseen call is made upon one for a speech, and of course during debates or in the course of discussions following lectures and demonstrations of exercises one may feel an irresistible urge to get up and talk. Should such an occasion arise, think out what you want to say, and note down the headings. Then rely on a quick wit, good memory, and extensive vocabulary. Never tell the audience that you came unprepared to speak. It is either untrue, or palpably self-evident.

The alleged Humorous Story.—An apt story is a useful adjunct to a speech. It is often the best method of driving home a point, it keeps the audience in good fettle, and may serve to revive their flagging interest.

Nevertheless, the story is a weapon which must be used with circumspection, chiefly because it is a weapon. It must be shot off like a gun at the audience, and not at the speaker, and it must never misfire.

Do not preface the story with a wealth of corroborative and obviously mendacious detail, but weave it into the thread of the speech and let it off before the audience know what you are about. When about to shoot a man with a revolver, one does not buttonhole him first, adduce some specious reason to account for being in possession of a lethal weapon, and then weary him with details of its mechanism. The first thing that the man should realise, if he realises anything at all, is that the assailant has gone serenely on his way to seek a fresh victim. Do not be afraid of telling an old story. There are only seven jokes in the world, and all that is required is an apt and up-to-date setting for one of them.

Nervousness.—Many people confuse nervousness with timidity and lack of confidence. It is impossible to speak well unless one has the confidence of one's own convictions, and with this confidence timidity should disappear, but not so nervousness. Nearly all great speakers suffer from nervousness, for the very good reason that the delivery of a convincing and impassioned speech demands the expenditure of considerable nervous energy. The great speaker gives his hearers not only words, but something of himself. Like the great actor, he should be exhausted at the conclusion of a telling speech. This is not muscular exhaustion, or even mental exhaustion, in the true sense of the term. It must, in fact, be nervous exhaustion. Do not, therefore, be discouraged by nervousness, but rather rejoice in the possession of a store of nervous energy upon which you can call, for this is the very stuff of which great speeches are made. Do not be put off by examples of men who "have no nerves." A surgical investigation would probably show that their cerebral cavities were devoid of brains.

General.—Avoid monotony of tone; it may send the audience to sleep.

Vary the speed of delivery, as this breaks up the speech, and lends greater force to the more telling periods, which should be taken slowly.

Do not despise the dramatic pause, it serves to drive home a point, and gives the audience time for thought. It should not, however, be extended sufficiently to give them time for reflection.

Should the audience by some mischance become inattentive, they can be recalled to the business in hand by pitching the voice slightly higher.

Authorities differ as to the use of the cigar when speaking after dinner. One cannot, of course, smoke and speak at the same time, but in my view a cigar is a useful "property," as it gives one hand something to do, and a reflective puff taken either just before or immediately

after the delivery of some pithy and possibly mirth-provoking statement serves to punctuate such a statement in a most effective manner.

Finally, authorities differ as to the demeanour which should accompany the explosion of a jest. It is certainly inadvisable to laugh at one's own jokes before they have been made, and in my opinion unnecessary and possibly affected to do so afterwards. A general air of geniality is permissible, but if it is desired to be really funny in the presence of an audience composed exclusively of Englishmen, I would strongly advocate an exaggerated air of gravity on the part of the speaker. The reasons for this curious piece of advice would fill a book.

Recapitulation.

The following is a summary of the more important points :—

(1) Breathe through the nose and by the abdomen.

(2) Stand up straight, and look the audience in the eye.

(3) Avoid the use of ugly gestures, mannerisms and theatrical tricks ; do not fidget.

(4) Speak clearly at about 110 words per minute.

(5) Do not drop the voice at the end of a sentence.

(6) Appeal to the heart without being sentimental, and to the head without an air of intellectual superiority.

(7) Enlarge your vocabulary, but avoid circumlocution.

(8) Compile a scrap-book, and index it if necessary.

(9) Prepare your speech carefully, write it out in full, and then cut out all redundant matter, and cut up overlong sentences. Rehearse it aloud ; learn it by heart ; deliver it, do not recite it.

(10) Always be prepared to give an " impromptu " speech.

(11) Shoot your humorous story at the audience, and not at yourself. Avoid misfires.

(12) Rejoice in the possession of nerves.

(13) Vary the tone, the speed, and the pitch ; and

(14) Remember that it is the duty of every speaker to lay himself out to intrigue his audience. Otherwise the audience may lay out the speaker to intrigue themselves.

THE LIFEBOAT SERVICE

By Captain Basil Hall, R.N.

On Wednesday, 1st March, 1933

Admiral of the Fleet Sir H. F. Oliver, G.C.B., K.C.M.G., M.V.O., LL.D., in the Chair.

The Chairman, in introducing the Lecturer, said they joined the Service together in 1878. Captain Hall had left the Service in 1895, and became a District Inspector under the Royal National Lifeboat Institution. He had remained in that office until November, 1914, returning after the War at the beginning of 1919. He resigned his District Inspectorship in October, 1919.

In November, 1914, Captain Hall was awarded the silver medal and vellum certificate of the Royal National Lifeboat Institution for a very gallant and outstanding service at the wreck of the P. & O. s.s. "Rohilla."

LECTURE

IF I really began the story of the lifeboat service from the beginning, I suppose I should have to mention that remarkable vessel which was 300 cubits long and 50 cubits broad. The length of the cubit having been discovered accurately by recent excavations in Egypt, this would make her roughly 450 feet long by 75 feet broad; a rather narrow-gutted craft for life-saving. Her beam, it will be noted, is only about one-sixth of her length, whereas in the lifeboat service we aim at a beam of at least a quarter the length of the boat. So much for the Ark!

Now I must leap across the dividing interval and come down to the XVIIIth century, which I always think was a very cruel period of our history; a time when people were very callous of human suffering and very indifferent to human life. In those days sailors were drowned by the thousand on our coasts, fast by their native shore and within sight of home, and nothing was done to help them; on the contrary, if rumour speaks truly, they were too often lured to their destruction by the ancestors of the very men who now risk their own lives to save them.

Towards the end of that century, however, something happened to better this state of affairs. In 1789 the lifeboat was born, and it came about in this way. There was then at South Shields, at the mouth of the River Tyne, a club of people who called themselves by the peculiar name of Gentlemen of the Lawe House. Any north-country man will not need to be told that "lawe" has nothing to do with the legal profession,

but is north-country language for a small hill. They called themselves by this name because their club-house was built on a small eminence overlooking the mouth of the River Tyne, and from their reading room they could see all the vessels that entered the river. They had also seen many dreadful wrecks. In March of that year a ship called the "Adventure" was approaching the harbour. She made the entrance safely, but almost immediately was thrown on the Hurd Sand on the South side of the river, and lay there at the mercy of a furious North-Easterly gale and a very heavy sea. In sight of all the inhabitants of South Shields, who were lining the bank of the river, her crew dropped out of the rigging one by one, and every one of them was drowned. Although she was only a few hundred yards from the shore, no boat dared go off to help her. This was too much ; the people called a public meeting to decide whether in such a case anything could be done. At that meeting, the Gentlemen of the Lawe House offered a reward to anyone who could build a boat which could have gone off and saved the crew, or some of the crew, of the "Adventure."

A man called Henry Greathead, a boat builder of South Shields, claimed and obtained the reward for a boat which he built and launched in the autumn of that year, and she was the first boat to be called a lifeboat. He did not build her entirely to his own designs, because others had been engaged on the problem, and he used their plans, too, especially the plans of two men, William Wouldhave—a house painter, also of South Shields, and Lionel Lukin—a coach-builder of Long Acre, here in London. The price paid for that boat was £74 9s. 3d. The price of one of our largest motor lifeboats to-day is £9,000.

Now, what is a lifeboat ? What was it these early pioneers set themselves out to provide ? A lifeboat is simply a boat which, on account of a certain method of construction and certain special devices, can live in a sea which would overwhelm an ordinary boat. There are seven points which are essential to a lifeboat, and they are as follows.[1] Firstly, she is a decked boat. Although she has the appearance of an open boat, she has a deck which is perfectly watertight ; no water can go through it, and the deck is above the level of the water. It has a freeboard of 8½ in. in the smallest boat and 2 ft. 6 in. in the largest.

The second point is that a lifeboat must have great strength. She must be much stronger than an ordinary boat in order to withstand the buffeting of heavy seas, and, of course, there is always the risk of her being knocked against the side of the wreck. But, in addition to being strong, a lifeboat must be light. The combination of these two qualities

[1] The Lecturer illustrated the various points by means of a small model lifeboat floating in a tank.

of strength and lightness is achieved in all British lifeboats by building them of well-seasoned Honduras mahogany which, I believe, is the toughest material for its weight known. Our lifeboats are always built of wood, but I believe the Dutch build theirs of steel. There are two diagonal skins, one superimposed on the other, of mahogany, and the stem and stern posts are of British oak, grown to shape. The expression "grown to shape" means that instead of bending the piece of oak to the required shape, it is cut and fashioned from a tree which is growing that shape. This, of course, makes it much stronger, but adds greatly to the expense.

There are two reasons why lightness is essential in a lifeboat. One is that she cannot be launched from an open beach unless she is fairly light.[1] The other reason for lightness is that many lifeboats are mounted on carriages and transported along the roads, sometimes for many miles, from the place where they are kept to a position near the wreck.

There is one rather famous instance of a boat being taken thirteen miles, which is worth recounting. In January, 1899, the full rigged ship. "Forest Hall," was observed in distress off Porlock Weir, in Somerset, Porlock had no lifeboat, so they telegraphed to the nearest station, at Lynmouth, in North Devon, and asked them to send theirs. It was blowing too hard to attempt to get out of Lynmouth harbour, and the only hope was to go by road. Most of the people said it was impossible, but the crew would not listen to that word, and said they would try. They collected sixteen horses and all the available men in the village, and at 7.30 p.m. they started off up Countisbury, one of the steepest hills in England, a mile and a half long, with a gradient at one place of 1 in 4. They climbed it inch by inch and eventually reached the top. Then they had to cross Exmoor. There were parts of the moor road so narrow that the lifeboat carriage would not go through, and the boat had to be taken off and dragged through these narrow sections on skids, while they took the carriage round through the fields, knocking the gate posts down in order to do so. In this way the night was spent, until at last they reached the top of the famous Porlock Hill, with its steep gradient, and its two hairpin bends. Somehow they got the boat on her carriage safely to the village of Porlock at the bottom. Here they found the village street in one place too narrow to go through, so they knocked a house down, and succeeded in reaching the "Forest Hall" just as dawn was breaking, and put enough men on board to lift her anchor and help to save the vessel and her crew.

[1] Boats which are launched from open beaches are fitted with ballast tanks. These ballast tanks are empty when the boat is on the beach, but filled by lifting a plug when she is in deep enough water.

This episode illustrates the importance of lightness. The boat in that case weighed 3½ tons, and the carriage weighed another 3½ tons, so that it was 7 tons altogether that they had to take on that journey.

The next point about a lifeboat is that she must be double-ended; that is to say whaler-shaped. In other words, the stern and the bow must be the same shape. The bow of every boat is, of course, pointed to cut through the water; but more usually the stern is round or square. There are, however, a good many boats with pointed sterns; the gondolas of Venice, the dhaisas of Malta, the Norfolk wherry, and of course the whaler herself. The most interesting of all double-ended craft was, of course, the Viking ship, on the lines of which Alfred the Great fashioned his long ships when he built his Royal Navy. There are two reasons for having pointed sterns to a boat. One is if she has to go astern frequently as well as ahead: the whale boat, for example, has a pointed stern because she has to back astern directly the whale is harpooned; the gondola and similar boats that navigate narrow waters have often to go astern. Another reason is for beaching purposes. When a lifeboat is running back from a wreck before a following sea, if she had a round or a square stern the sea would get underneath her, broach her to, and capsize her; but a pointed stern cuts the water and prevents her broaching to. Incidentally, every lifeboat when running for the beach pays out a drogue, a conical canvas bag, which keeps her stern on to the sea. On a steep beach like the Norfolk and Suffolk beaches, the lifeboat is beached broadside on. She runs for the beach and, just before she reaches it, at the last sea, the coxwain puts the helm hard over and lands her broadside on. It is the only safe way of beaching a boat on a steep beach.

The next point about a lifeboat is that she must be a good sailing boat. I know most people think that lifeboat work is done under oars, and to a certain extent that is so, but for a century before the invention of the motor lifeboat, most of the great rescues were done under sail. The reason is very simple; so many wrecks occur too far from the land to make it possible to row the boat out to them; besides, the boats are too large. Probably the largest number of wrecks on any part of a coast line in the world occur in the estuary of the Thames, and the adjoining coasts, the shores of Essex, Suffolk and Norfolk to the northward and Kent to the southward. This, doubtless, is partly due to the enormous number of ships making for the Port of London, and partly to the fact that this locality is full of dangerous shoals; five, ten, fifteen and twenty miles out there are nothing but sandbanks—the Cork Sand, the Gunfleet, the Spitway and many others, down to the notorious Goodwin Sands off the coast of Kent, a shoal which from time imme-

morial has been a death trap for shipping. Three hundred and fifty years ago, Shakespeare mentions, in " The Merchant of Venice," " that fatal and dangerous flat where the carcase of many a tall ship lies buried." That was the Goodwin Sands, and many a tall ship has been buried there since, but, thanks to our lifeboats, the crews have not been buried with them. Obviously, before the invention of the motor lifeboat, a large boat could not go out to those shoals under oars, therefore the lifeboats had to be good sailing boats.

All lifeboats are fitted with drop keels. The latter are, of course, kept up and housed in the boat while she is on shore, and lowered when she gets into deep enough water to let them down, and that helps to make her a very good sailing boat. As long as it is blowing hard enough, a lifeboat will hold the wind as well as any boat I know. I once left Lowestoft Harbour neck and neck with one of the famous Lowestoft smacks. It was blowing a gale; we beat to windward together—and the lifeboat outsailed the smack! Lifeboats are all lugger rigged. The Norfolk and Suffolk men prefer dipping lugs, because they say the boat holds the wind better, but most of the other boats have standing lugs.

The next point about the lifeboat is that she must be unsinkable. A great many things happen to lifeboats, but I have never heard of one being sunk. Sometimes they get holed, either by a rock or by a jagged spar sticking out from a wreck, but even then they do not sink. This is due to their construction. The inside of the boat under the deck, is full of air cases, of which there are 80 in a small boat and as many as 167 in the largest boats. The inside cases are rectangular, but the outside ones are shaped to the boat at the bow and stern, so that every single corner is full of them. If the boat is holed, water comes in, but, apart from the one or two air cases which are pierced at the same time as the skin of the boat, the water does not go further; it can only circulate in the small space which it has entered. She will ride a little lower in the water, but she will not sink.

A remarkable case of a lifeboat being holed occurred a few years ago at Moelfre, in North Anglesey. The lifeboat went out to a schooner which was wrecked about eighteen miles away, and the coxswain, when he got there, found that the only way to take the crew off was to take his boat, under full sail, over the schooner. I do not pretend to understand how he did it, but the fact remains that he sailed right over the schooner, and then sailed back again after he had saved the crew. In doing so he knocked three large holes in the boat, but she came back safely.

The last of the seven points about a lifeboat, and I think the most important of all, is that she must be self-baling; that is to say, all the

water that comes into her must go out of its own accord. Of course, when an ordinary boat ships water, it has to be baled out by hand. That is no use in the case of a lifeboat, because when water comes into her it does not come in in driblets, but the sea—especially in broken water, as when crossing the bar of a river—goes right over and smothers her, filling her to the gunwale; and, long before she could be baled out, another sea would have come in. She would not sink, but she would be full of water the whole time and quite unmanageable.

The self-baling principle adopted for lifeboats is very simple, but extraordinarily ingenious. In the case of a small boat, there are six holes—in larger boats there are eighteen—in the deck of the boat, and there are corresponding holes in the bottom of the boat. Each pair of holes is joined by a copper tube, so that all the water that comes into the boat runs down these copper tubes until it is level with the water outside.

There is one other point about a lifeboat which I have not included among the essentials, because it is not really essential, and that is the self-righting quality. When I joined the lifeboat service, by far the greater number of boats were self-righting, but now I think only about half of them are. By "self-righting" I mean, of course, that a boat will come up the right way if she has capsized. They are not all self-righting; a great many crews prefer a non-self-righting boat because she has certain qualities which you cannot give to a self-righting boat. She is broader in the beam and a better sailer, and she is not so likely to capsize. The Norfolk and Suffolk men, who are amongst the best boatmen in the world, will not have self-righting boats. They have to get out to the shoals, and they want the best possible sailing boat to take them there. Before a new boat is sent to a station, the men are sent to look at different types and allowed to choose the type they like best. Those who have hitherto preferred self-righting boats or who have had self-righting boats are gradually realizing the qualities of the non-self-righting boat, and more and more such boats are being chosen. To-day, more than half our lifeboats are non-self-righting. Nevertheless the self-righting boats are extraordinarily useful, and have done very good work in the past.

An interesting story is told about the discovery of the self-righting principle. William Wouldhave, the painter, wanted to design a self-righting lifeboat. Greathead's boat was not self-righting, and he thought it would be a great improvement if he could make one that was so, but at that time nobody knew how to do it. One day Wouldhave saw a woman drawing water from a well. Her pail was full, and lying on the surface there was a little piece stripped off a wooden bowl. Wouldhave got into conversation with the woman, and, while chatting with her, idly

turned this piece of wood over, without thinking what he was doing. Presently. however, he noticed that every time he turned it over it came back with the ends up, and he realized that he had solved his problem. He made a model of a lifeboat shaped like his piece of wood, borrowed a large vat from his employers and proved his point. All self-righting boats have been made on similar lines ever since.

However well a boat is managed, she may be capsized, especially crossing the bar of a river. What happens then ? The men are thrown out—they are not lashed in, as some people think—but they do not sink, because they wear lifebelts. These lifebelts are not cork jackets, although that is an expression still popularly used. For many years, not only in the lifeboat service but in the Royal Navy and the Merchant Service, lifebelts have been made of canvas stuffed with Kapok. This was a very common material, long before it was found to be the lightest stuff for its bulk, and was used for stuffing cushions, car seats, sofas and so on. It will keep a man afloat, with his sea boots and heavy clothes on, for quite as long as he wants to be kept afloat in cold water. While the men are in the water, the boat rights herself, and then they can get back into her. In the case of a motor lifeboat, if nothing were done to prevent it, the engine would not stop when she capsized ; she would right herself and go away without the men. A special device is therefore fitted by which the electric circuit is broken by a column of mercury which falls away into a receptable when the boat is capsized and returns to its place when she rights herself. This stops the engine which has to be started again in the ordinary way.

All these different requirements were not, of course, to be found in Greathead's first boat ; some of them were discovered and developed afterwards, as lifeboats were improved. Nevertheless, his boat was a very good one and did excellent service on the Tyne, saving a great many lives. After forty years' work she was broken in pieces on the rocks. South Shields was very proud of being the first place to have a lifeboat, and when they got their charter of incorporation as a borough they adopted the lifeboat as their coat of arms, and the motto " Always Ready." They also had a large model of a lifeboat built and hung from the roof of their parish church, where it is to be seen to this day.

Other lifeboats were built—most of them copies of Greathead's By the year 1824 there were altogether thirty-nine boats round the coasts of this country. One of these was stationed at Douglas, in the Isle of Man, and here there lived a very remarkable person called Sir William Hillary. He was a soldier by profession, an author of some repute, a great traveller and, at heart, I think, a sailor, because he never allowed the Douglas lifeboat to go out without forming one of the crew

himself. During his career, he helped to save 305 lives. On one occasion, when the boat was being launched the sea washed him out of the boat and dashed him against the rocks, and several of his ribs were broken. He refused to go back, and helped to save the crew of a schooner wrecked in Douglas Bay.

Hillary was not only a brave man, but a wise one, and he saw that these thirty-nine lifeboats were nothing like enough for the 5,000 miles coast-line of these islands. He saw, too, that the system, or rather the lack of system, by which they were placed was a disadvantage. In those days, if a place could afford a lifeboat and wanted one, they bought one and kept it there, or if some rich benefactor gave them a lifeboat—perhaps the Lord of the Manor would do so—then the boat remained there, irrespective of the number of wrecks which took place in the locality. There were therefore some places with lifeboats and very few wrecks, and others with many wrecks and no lifeboats. Hillary saw that the only cure was to put all the lifeboats under one organization, where they would be properly co-ordinated, and, with a fiery zeal for the welfare of the sailor, and a burning indignation against the callousness of people to the number who lost their lives by drowning, he preached a crusade through the length and breadth of the country, and by speech and writing put forward his views. At last he got his way. In March of that year, 1824, a large and very influential meeting was called in the City of London. The Archbishop of Canterbury presided, and not the least eminent of those present was William Wilberforce. It is an interesting historical fact, as General Seely mentions in his book, that two saviours of human life, one from shipwreck and the other from slavery, should there have met for the first time. Hillary put forward his views at that meeting, and Wilberforce embodied them in a resolution which he moved; and the Royal National Lifeboat Institution was founded. The resolution was to the effect that it should be an institution for the preservation of life from shipwreck, and that its objects should extend to all, without distinction of country, in peace and in war.

I think it may be claimed for the Royal National Lifeboat Institution that during the hundred and nine years of its existence it has carried out that resolution both in the letter and in the spirit. It found thirty-nine lifeboats, inadequately manned, imperfectly equipped, and very precariously maintained. It added to their number and improved them in quality, until it now has 177, of which 111 are motor lifeboats. Since its inception, its lifeboats have saved over 63,000 lives, which is at the rate of eleven a week all through the century—and, as the resolution stated, irrespective of country. I think it may also be said that there is not a single country in the world with a seaboard whose citizens have not,

at one time or another, been saved by our lifeboats, and the Institution can now boast that there is no place on the whole coast of these islands unguarded by a lifeboat, provided that it is necessary to have a lifeboat there and that a crew can be found for one.

One word about the crews. There are no men, with one single exception, paid as lifeboatmen and sent to a place as lifeboatmen for that place. The arrangment is that all the lifeboats are manned by the best men that can be found in the place where they are stationed. Fishermen are much the best lifeboatmen; they are brought up almost from childhood in open boats, and they know their own coast and its currents and shoals. The boats which do the most work—those in the estuary of the Thames—are all manned by fishermen. Failing them, we get sailors of many different kinds. In a few places where it is absolutely necessary to keep a lifeboat, there are no seamen to be got. One such place is Cambois, on the coast of Northumberland, where the crew are entirely miners, and very good they are. Another is Donna Nook, in Lincolnshire, where the coxswain, some years ago, in sending in his return of a lifeboat rescue, described the weather conditions as "a haycock sea"; it is obvious what the normal profession of that crew was.

Briefly, that is the story of the lifeboat service. If I were asked to tell you something of what lifeboats do, I should be inclined to say take up your newspaper almost any morning in the winter and there—not scored with large headlines but in some obscure corner—you will find a notice that such and such a lifeboat had been out for so many hours and had saved so many lives. On the other hand, if you really want to know more about what lifeboats do, I recommend you to read General Seely's little book published under the title "Launch." It is written by a man who is not only a great soldier but is a member of the lifeboat crew at Brook, in the Isle of Wight.

However, I have been told that I cannot give a lecture on the lifeboat service without describing a typical actual lifeboat rescue; so I will try to do so. This is a first-hand account of a wreck and the rescue of a crew because I saw the whole incident myself, and took part in the rescue although it was a very small and insignificant part compared with what others did.

The tragic loss of the hospital ship "Rohilla" in October, 1914, would have made much more stir in this country if it had not been that more momentary events were taking place on the other side of the Channel. The "Rohilla," with 229 souls on board, including five women, struck the rocks known as Saltwick Nab, about half a mile or so to the eastward of Whitby, in the early hours of the morning of the

30th of that month. Apparently the sea lifted her over the outer reef into a sort of hole or cleft, where she broke her back, and fell in half. You may remember the very graphic description of St. Paul's shipwreck; how the fore part stuck fast and the after part was washed away by the violence of the waves. That is what happened to the "Rohilla"; but in this case all those in the after part were drowned. Those who were in the fore part, however, took refuge in the deck house on the bridge: the only part of the ship left above water. The Whitby lifeboat was launched as soon as the distress signals were seen. She was carried by land to leeward of the vessel with enormous difficulty, after being taken along the rocky foreshore and lifted over a wall eight feet high. There she was launched and saved seventeen of the crew, including the five women nurses. She went back a second time and took off eighteen more, which was as many as she could hold; but on her return she was dashed in pieces on the rocks, and was no further use. The other Yorkshire stations were informed of what had happened by telephone, and one by one their boats came down to seaward of the vessel. They saw the position she was in, with a reef of rocks outside her, and realized that they could not board her from the windward side. They knew of no way of crossing the barrier of rocks and getting to the lee side, and so, one by one, they went home again.

When the next day came, and those still on board the wreck saw the last lifeboat turn back, many of them became desperate and, giving up hope, leaped into the water and tried to swim to the shore. A few did reach the shore safely, but most of them were either drowned or battered to pieces on the rocks. However, fifty of them decided to face it out for another night in the bridge house. When the Whitby authorities saw this, they knew that the only hope of saving these survivors was a motor lifeboat. The nearest was at Tynemouth, 44 miles away, and they telephoned to ask for it to be sent down. The Tynemouth lifeboat started on the Saturday evening, and made the passage during the night. This alone was an extraordinary feat, for it was blowing a very heavy gale, with a tremendous sea, and it was pitch dark: being war time, all the lights on the East Coast had been put out. Not only did they make this dark and difficult passage, but they got into Whitby harbour, which has a very narrow entrance. That achievement was due to the Assistant Honorary Secretary of the Tynemouth Lifeboat Station—Captain Burton, of the Royal Engineers. Half a seaman by profession, having belonged to the old Corps of Submarine Miners, abolished when the Navy took over all sea mining, he was wholly one by vocation and genius, because he spent all his leisure navigating small sailing boats up and down the East Coast, and knew it like the palm of his hand. I doubt whether anybody else could have brought that boat

down on that pitch black night, and into Whitby harbour when not even a glimmer of a town lamp was showing.

I was ordered to Whitby on the day after the " Rohilla " was wrecked to take charge of operations. I got there on the evening of the second day, and found nothing more could be done to rescue the crew until daylight, when we hoped for the arrival of the Tynemouth lifeboat. Meanwhile I made some preparations. I had always heard of casting oil on troubled waters, but, although I had been at sea a good many years, I had never seen it done ; in fact, I generally heard it spoken of rather sceptically. But it was worth trying, so I spent the evening going round Whitby collecting oil everywhere I could get it from shops, garages and private houses—and sending it down to the quay.

The Tynemouth lifeboat came up harbour in the small hours of the morning of the 1st November. We got the oil on board and, taking one of the Whitby fishermen as a pilot, started out as soon as it got light. Working our way to windward of the wreck, we discharged our cargo of oil. What happened then is best described by a man who was looking on from the cliff top above. He said : " it seemed that the ocean must laugh at these puny drops, yet the effect was remarkable. Within a few seconds the oil spread over the surface of the water, and the waves appeared to flatten down as if by a miracle." We saw at once, of course, what we had known before, that it was quite impossible to board the vessel to windward, but there was a gap in the reef some way astern of the vessel which, I think, was known only to the Whitby fishermen. It was only thirty feet wide, but our pilot ran the boat through it, and rounded up alongside the wreck, where we at once began taking the crew off. It was a very difficult job, for they had been fifty hours in the chart house, washed by practically every sea that came over, and were faint and exhausted from lack of food and shelter. However, forty of them managed to get down into the boat ; but, by then, the effect of the oil had worn off and great seas came tumbling over the vessel and down on to the lifeboat like a cataract, filling her to the gunwale again and again. Of course, she emptied herself, but the last ten men got off with very great difficulty indeed. Nevertheless, we got them all safely into the lifeboat, and then came the most difficult part of the whole voyage, because we had to put the boat broadside on to the sea. Just as we reached the gap, a tremendous sea struck her and threw her practically on her beam ends, and I suppose most people thought it was all up. However, she righted herself, and before another sea had time to strike her she was end on. I never saw a better piece of seamanship than the way Robert Smith, the coxswain, managed that Tynemouth boat. After that it was all easy work, and, to cut a long story short,

we landed the fifty survivors safely at Whitby. The onlookers were so impressed that, there and then, they collected £500 on the cliff in order to give Whitby a motor lifeboat, and Whitby has kept up a motor lifeboat to this day.

That story proves two things. The first is that oil can be very usefully employed in the case of shipwreck, and the second and more important still is the invaluable nature of the motor lifeboat. Only a motor lifeboat could have done that work, because, even if a hand-worked boat had been able to get through the gap in the rocks, it could not have rounded up in time, the narrow strip of water off the rocky shore; only a power boat could have done that.

The Lifeboat Institution is aiming at putting more and more motor lifeboats on the stations and, eventually, practically all but about forty will be motor lifeboats.

In conclusion, I want to remind you that the lifeboat service is a voluntary service. When I first went out in a lifeboat there was a badge on the bow of every boat, with the words "Supported by Voluntary Contributions" as a motto round the badge—I see you have it on the model in your Museum. It is not for me to question the wisdom of the Committte of Management in changing the badge for a flag, but personally I liked the badge, because I think it meant a lot. To me it meant, to begin with, the ordinary "voluntary contributions," those of money: the lifeboat service is supported entirely by the gifts of the public; there is no subsidy from the Government or from any other organization. Then it also meant that the service is managed by volunteers from the Committee of Management in London, of which our Chairman is a member—and, now that I am no longer one of the servants of the Institution, perhaps I may say that I have never known a more hard-working committee than that which controls the Royal National Lifeboat Institution. It consists chiefly of a number of Admirals and yachtsmen and others with a very good knowledge of what they are doing. There are also those who manage the lifeboats round the coast: the Honorary Secretaries with local voluntary committees and inland branches. Altogether, there are, I believe, something like six thousand officials on the coast and inland. Lastly, the old badge, seemed particularly appropriate as the emblem of the "voluntary contributions" of the men themselves. Lifeboatmen are all volunteers. They are rewarded when they go out to save life, whether they save it or not, but they get no salary. They are under no obligation to go, and *their* voluntary contribution is, I suggest, the greatest of all because, in the last resort they make the greatest contribution that men can give to any service, and that is their own lives.

DISCUSSION

CAPTAIN E. ALTHAM, R.N.: Can the Lecturer give us some details of the latest motor lifeboats; such as their dimensions, fuel, self-righting qualities (if any), and other characteristics, as compared with the older designs.

THE LECTURER: Most of the modern lifeboats have been constructed since I left the Lifeboat Service; but there are 111 motor lifeboats of different types and sizes, and, as I said just now, the Institution is aiming at having eventually 172 lifeboats altogether, of which 129 will be motor lifeboats. The largest motor lifeboat of all, and one of the largest and fastest, I suppose, in the world, is that which is appropriately named "Sir William Hillary." This boat is 51 ft. x 13 ft. 6 in. She has twin screws and two 60-h.p. engines. The engine-room is watertight, and each engine itself is watertight, so that even if the engineroom were flooded the water would not get into the engines. She carries petrol for 120 miles at full speed without refuelling, and has a crew of eight, and is capable of carrying a hundred passengers. There is a cabin for the rescued people, and electric lighting throughout. The boat is equipped with an electric searchlight, and has an apparatus in the bows for spraying oil, and a line-throwing gun. I believe this is the only one of this type and no more are being built.

The lightest motor lifeboat is simply a 35 ft. boat, and she can be launched off a carriage.

There is a rather interesting test to which a motor lifeboat has been put. I do not know if they are all so tested, but this one was. The engine-room was flooded with fresh water up to the outside water level, the water weighing the equivalent of eighty-three men, so that, with the seventeen men who were on board, the weight represented was that of a hundred men. The boat was taken to sea, and for two hours run at the full speed of 1,200 revs. per minute, with the water in the engine-room washing heavily over and round the motors and against the bulkheads. On this occasion the sea was slight and the wind moderate. Next day she was taken out for her endurance trials, in a gale of wind and a heavy sea, and they were carried out without a hitch; so that the filling of the engine-room with water did not affect the engines at all.

A MEMBER asked how the propellers of a motor life-boat were protected.

THE CHAIRMAN:

The propellers are in a tunnel, but we are now going to experiment with a new form of propulsion which will means no propellers at all. We have not started the trials yet, however. It is known as cone propulsion, and is something in the nature of the old hydraulic propulsion that the Admiralty tried about fifty years ago.

The Lecturer has mentioned the Dover lifeboat. It was stationed there in view of the possibility of a serious accident with the Channel steamers. There has never been one yet, but, with the heavy traffic there is in the Dover Straits, and the large number of fast cross-Channel steamers running to Ostend, Calais, Boulogne, and so on, there is always risk of collision involving a large number of passengers, even in calm weather; in a fog, for instance. The Institution therefore decided to have a large and very fast lifeboat at Dover. This boat can do 18 knots in smooth water, and carry many passengers, so that if there should be a bad collision she could get to the scene quickly and take off many passengers. Saving aircraft is a secondary consideration. Of course, it is not possible for that lifeboat to go 18 knots except in very smooth water; in a gale of wind she could not go any faster than any other lifeboat without knocking herself to pieces.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

SOME REFLECTIONS ON MODERN MILITARY TACTICS

A REPLY

By "SARACEN."

AN excellent article by Major MacLeod under the above title appeared in the February issue of the JOURNAL for 1932. There will be general agreement with the conclusions reached in it, but a few observations on it may be of value :—

Advance and Attack.—The author advocates an advance in a number of small columns spread over a wide front in preference to an advance in one or more big columns. He claims for his system :—

(*a*) Less time taken to deploy ;

(*b*) Full fire effect developed early ;

(*c*) More suitable for envelopment ;

(*d*) Offers smaller target to air and artillery attack ;

(*e*) Easier to conceal troops and so effect surprise.

These benefits may be conceded ; but certain obvious objections to the system should be noted :—

(i) The difficulty of finding suitable roads or other approaches.

(ii) The difficulties of supply and communication.

(iii) Special vulnerability to flank attack.

(iv) The difficulty of changing front if the enemy has been wrongly located.

These objections by no means demand the rejection of the proposed system. They mean, however, that if it is to be employed, then special arrangements must be made for reconnaissance, supply and communication. So important would reconnaissance be, both from the air and on the ground, that a superiority in aeroplanes and light cars would appear to be essential to success.

The Defence.—The suggestions made for grouping in defence are the best possible, and would no doubt be effective against an opponent

playing the game according to text-book rule. But Major MacLeod is evidently not very sure of their value under modern conditions. And he sums up, very rightly as regards mobile defence, in stating "the only real solution is for the defence to create an opportunity to launch a counter-offensive, which will make full use of its mobility and hitting power."

It will, however, be no easy matter for the defence to create such an opportunity under far-thrown pressure of armoured fighting vehicles.

The difficulties for the defence brought out in the essay under review and experienced in most uncomfortable fashion by every commander who in the last few years has had to deal with the attack of mechanized forces open up wide questions :—

(*a*) Is there to be any such thing as defence in mobile warfare? Will not future land battles be a matter of manœuvring for position, followed by attack, just as they are though more simply on sea and in the air? In short, must not the "opportunity" be gained by manœuvre initiated from the basic idea of attack and not from that of defence?

(*b*) With regard to well-equipped forces operating in well-roaded countries, will not the word "defence" for the future have but a single meaning, that of a long, entrenched, wired, and concreted line, vulnerable only to attack by heavy guns and heavy tanks or to the attack by air of rear communications?

(*c*) If this general attitude towards defence is sound, should not nations decide whether their policy, apart from police-work, is to be that of defence or attack and equip accordingly?

(*d*) Arising out of (*c*)—if a nation girt by the sea and defended by aerial and naval forces possesses ground forces, other than police forces, should it not equip them entirely for the manœuvre battle?

(*e*) Is not the League of Nations working on entirely wrong lines with regard to qualitative disarmament? If the assumptions made above with regard to defence are correct, the abolition of heavy guns, heavy tanks and air bombers would only avail to render secure such nations as had firmly intrenched their entire frontiers and possessed the numbers to man them. It would not affect the normal form of battle—the play of stroke and counterstroke. Can any system of material disarmament be really effective in a world which includes potential attack-weapons such as the aeroplane by the thousand and the motor car by the million?

General.—In his summary, Major MacLeod suggests, as being more suitable to modern conditions, a weaker battalion; one, say, of three hundred men capable of transport in armoured cross-country lorries. Something of this nature has been urged in vain by various writers for the past six years. There should not, of course, be a single animal in such a battalion. Support by heavy M.Gs. would be found in fighting vehicles. Light M.Gs. would be carried by hand.

It may be further suggested that no battalion should have a single animal on its establishment, even when its probable task is that of colonial or police warfare rather than action with mechanized forces. In police duties it is almost invariably the case that troops are despatched in lorries to the seat of trouble, in which event they *must* leave their animals behind. Better then if they are accustomed to do without. For operations in mountain or bush warfare our forces as at present organized are purely protective and have hardly any offensive value. Columns are mere guards to transport whether that transport is for guns, machine-guns, baggage or supplies. The difficulties and dangers of operations under such conditions are recognized to the extent that, normally, we enter a hostile country now by means of metalled roads, the pace of our columns being limited by the rate of construction and supplies being furnished by mechanical transport. In such case the animal is not needed in the battalion. To overcome organized resistance at roadhead and to support the occupation of piquets from roadhead, guns and heavy machine-guns would be available. For other operations from roadhead the absence of animals would give a battalion greater striking power, a wider liberty of action and a higher mobility. Where a move might entail absence from camp for one or more nights, then rations and blankets must be dropped from the air.

A battalion without animals therefore renders the unit doubly efficient for the majority of its normal duties. The fulfilment of abnormal duties would require improvisation—a task in which we have wide experience.

The new organization would require, firstly, the relegation of heavy machine guns to separate units; secondly, the introduction of specially light machine guns or automatic rifles to be carried with their ammunition on the man.

Were this plan to be adopted the organization of infantry would be the same whether battalions were due to act with mechanized forces or for police duties or for mountain warfare. Each battalion might consist of two or more rifle companies, each of three hundred men, and companies could be detached as required for special duties.

Conclusion.—Finally, Major MacLeod makes an appeal for " thinking ahead." Mechanical and scientific progress is so rapid that our tactics

and organization are liable to lag behind. Actually, the Air Force is thinking furiously and well, but its efforts are wasted, in fact are doing actual harm, because it is thinking for itself alone. The Army and the Navy are not thinking forward but back; that is in terms not of the next war but of the last. In this matter we must all work together. A certain amount of co-operation has been effected by means of the Committee of Imperial Defence, the Conferences of the Chiefs of the three Services, and by the Imperial Defence College. But we must now go further in this direction; for a vast number of questions, some of which have been foreshadowed above, are demanding solution.

As regards the Army, thinking ahead might be forced upon it were every General Staff Officer made to submit yearly to his chief a paper on the nature of Future Warfare, the changes in organization and equipment demanded thereby, and how such changes could be financed and otherwise effected. He would then have to put a telescope to his mental eye—certainly to his own benefit and, possibly, to the advantage of others—and might spy out for himself facts such as that co-operation is better than friction, that man and organizations progress by sacrifice, and that traditions have their dangers as well as their values.

The article under discussion ends with the quotation that "thinking costs nothing." There for once I am in entire disagreement with the author. Thinking costs effort; and it is that we are up against. The true, if unfortunate, representation of our case lies in another quotation. "Thinking makes hard work but prejudice is a pleasure."

THE DIRECT-CONTROL AUTOGIRO

ITS POTENTIALITIES AS A SERVICE AIRCRAFT

By CAPTAIN H. J. PARHAM, R.A.

DURING the past twelve months something of a revolution has occurred in aeronautics as a result of the development of what is known as the " direct control " autogiro. The first two-seater example of this machine, the C/30, was publicly demonstrated for the first time on 27th April, 1933, and this event was reported the following day in most of the leading newspapers. As is often the case, however, there were only one or two papers which fully grasped the significance of this development in aviation. The following notes about this new aircraft may, therefore, be of interest.

In order to appreciate why this machine marks such an advance one must first of all realize exactly how far the aeroplane had been developed by, let us say, the end of 1932. Since 1909—the year when serious flying first began—the speed record has gone up from under fifty to over four hundred miles an hour, and the altitude record from about one thousand to almost forty-four thousand feet ; rate of climb, manœuvrability, lifting capacity, structural strength, and reliability have also improved to a quite astonishing extent. All this is most satisfactory and the aeroplane has very definitely come into its own as a vehicle of public transport and as a fighting machine. But if one looks more closely into these results one sees that there is one vital factor which has developed the wrong way, for, in 1909, there were machines, notably the Wright biplane, which could fly under some sort of control at just under thirty miles an hour, whereas to-day there is no R.A.F. service machine capable of fully controlled flight much below sixty miles an hour.

Even the light aeroplane, which we are asked to accept as the motor car of the air, is as a rule most unsafe to fly near the ground at an air speed below forty-five miles an hour. We are, therefore, faced with the rather solemn thought that our " conquest " of the air has been achieved only by scrapping all that portion of the speed range in which the greater part of all other human activities take place. This fact produces the following serious difficulties. To begin with, the deeply ingrained instinct to go slow when in doubt or difficulty must never be allowed to

influence the aeroplane pilot, particularly if he is manœuvring low down, since both lift *and control* are dependent on forward speed. Next, owing to this high minimum speed, which must be maintained at all costs, the steepest gliding angle is very flat, and an aeroplane cannot be dropped into a small field with obstructions, such as trees, houses or a high hedge on the side from which the machine approaches. Finally, the actual speed of touching ground, even with the most perfect of three-point landings aided by slots, flaps, split flaps, air brakes or all these in combination, is still so high that this manœuvre on rough ground requires most expert piloting and considerable luck.

Now, in 1925 certain far-sighted individuals brought over to England a machine known as the Autogiro, the invention of a Spanish engineer, Señor de la Cierva. At first the machine had every appearance of being but another of the scores of aeronautical "freaks" which, from time to time, have been presented to the flying world; but its initial demonstration at Farnborough in October, 1925, which the writer was fortunate enough to see, sent all the spectators home with the conviction that they had witnessed an event which was bound to become historic, for this machine showed for the first time that it *was* possible to produce a craft, heavier than air, which could support itself with full stability more or less regardless of the speed of the machine as a whole through the air. As is only natural, the development of such a novel machine proceeded slowly and amidst a great deal of misinformed and often biassed criticism. However it made good, and by the end of 1932, having overcome most of its engineering problems, it had become accepted as a recognized means of flying. At this point it may be well to consider some of the salient features of the 1932 Autogiro. Judged from the engineering standpoint, it is one of the most daring and at the same time one of the simplest structures imaginable. The rotor, or windmill, which takes the lift of the machine spins entirely free under the influence of the air forces acting upon it—this was the inventor's first great discovery. When piloting the machine one finds that whatever one does it is impossible to make the speed of rotation of this rotor vary more than ten revolutions either way from its normal of 180 r.p.m. (on the C/19 type). Secondly, nothing stops the blades folding up vertically except centrifugal force; in other words it would be quite impossible to lift a stationary autogiro off the ground by jacking up under its rotor blades. As a result of this second great discovery, the inventor has been able to produce an aircraft with two important advantages. The rotors, which do the duty of the wings in an ordinary aeroplane, are always in tension, and therefore stronger in proportion than fixed wings which must take compression strains somewhere in

their spars. Again, in the Autogiro, complete automatic stability has been achieved without the undesirable qualities of "taking charge" which automatically stable aeroplanes were prone to exhibit, especially when being landed.

Lastly, by making the rotor blades free to flap vertically and to rock backwards and forwards in the plane of rotation, not only are bending movements almost eliminated from them but gyroscopic force is entirely done away with.

So much for the engineering features of this aircraft. Now for the flying characteristics. In the air, the outstanding impressions one gets are (*a*) that the all round view, except immediately ahead and beneath the nose, is excellent; (*b*) that the machine has no vices or tricks; (*c*) that the genuine speed range, flying level and under control, is from 30 to about 90 miles an hour; (*d*) that the ability to control the gliding angle from 1 in 6 to almost vertical descent makes approaching to land very easy, especially as, during the whole descent, one is sitting over the edge of the landing ground and has ample leisure to study it without being bothered with making gliding turns, etc.; (*e*) that the absence of any fear of stalling entirely alters one's whole outlook upon flying. On the other hand, certain disadvantages, such as a rather lower top speed and a slightly poorer load carrying capacity, have had to be accepted as a price to pay for this added security.

There is one further criticism to be made of the 1932 Autogiro, and this must be understood before we turn to the "direct control" machine. Control of this pre-1933 type depended on the use of ailerons, rudder and elevators—in other words upon a system borrowed from aeroplane practice. To be effective these control surfaces must have a certain speed through the air, and therefore full use could not be made of the Autogiro's ability to lose height vertically since, although in vertical descent the machine is fully stable, there is always the possibility that on nearing earth it may be momentarily deflected by a gust and touch the ground sideways or on one wheel, with unfortunate results. To obviate this, the normal method of approach consisted of vertical descent to within 150 feet of the ground followed by a slow and steep forward glide at a speed of about 35 m.p.h. with a normal flattening out. The machine then touched ground at some ten to fifteen miles an hour and stopped in its own length. Even so, this was a great improvement over the aeroplane's method of landing.

But, to-day, the "direct control" invention has put the whole operation on an entirely new footing. What the inventor has done is to mount the rotor hub upon a universal joint and given the pilot a "hanging joystick" wherewith to alter the inclination of the axis of the rotor;

at the same time the elevators, ailerons, and rudder have been done away with and with them almost the last vestige of aeroplane practice. The result is that the pilot now has control just as firm and positive at ten as at a hundred miles an hour, a lot of unnecessary weight and complication have been eliminated, and—due to the abolition of the small fixed wings—the view has been made almost perfect. The machine has gained in performance in every direction and it now only remains for a satisfactory variable speed transmission and controllable pitch airscrew to be evolved to raise the performance far higher. Even as it stands at present, the machine is a practicable aircraft which has successfully broken into that essential bit of the speed range between forty and zero miles per hour.

What is the value of such an aircraft to the Services? The writer, being a soldier, proposes to consider for a moment how it might be used in the Army. One of the chief problems in war is how to find out what is happening, not only behind the enemy lines but also in our own front line and back areas. The ideal way to obtain this information is to get hold of an observer *personally*, tell him what you want to know, send him to find out, and then get his report. At present, a staff officer sent out to gain information has to get about on a horse, in a motor car or on foot, if he travels on the ground; alternatively he must go back some ten miles or more to an advanced landing ground, and then secure his information while roaring round the sky at a hundred miles an hour or so. Similarly, the battery commander wishing to see a target out of sight behind a hill is compelled to call upon a unit operating from a distant landing ground to help him, where five minutes in the air above his own battery position—even a thousand feet up—would meet all his requirements.

A great deal of vital information about the enemy and almost *all* the very essential information about one's own forces—for example, that secured by personal visits to neighbouring headquarters, by flying low over roads and noting congestion, the progress of marching columns, etc.—could be obtained, given a thoroughly controllable, quick rising, and slow alighting, flying machine like the new Autogiro, even in its present "light aeroplane" form. As regards vulnerability; except from above, the machine is inconspicuous in the air, and its great manœuvrability, its ability to fly safely at very low altitudes, and its power of landing nearly anywhere, should mean that it could do most of its work under the protection of the ground troops without being asked to fight, any more than is the staff car of the present day. In this connection one must remember that all Autogiros hitherto seen in this country have been of low power, and no machine of the fighter class has ever been made.

It is just conceivable that it may not prove such a "sitter" as some critics would have us believe for, as one well-known pilot puts it, "the ability to keep on the inside of the circle may alter all the accepted ideas of air fighting."

The conclusion to which one comes is, therefore, that the Autogiro in its latest form should be regarded as a new form of transport, with certain very marked advantages over the older means of getting about, and that it should be given a trial with the Army in peace and, if opportunity offers, on active service—perhaps on one of our frequent Frontier expeditions. The great essential seems to be that it should not be asked to do too much at the start, and that its use should be confined to intercommunication and close reconnaissance work over its own lines with, if possible, a trial as an O.P.—a sort of glorified observation ladder—for a medium battery or brigade. Whatever the result the experiment is sure to be instructive.

If further developed and increased in size, the characteristics of the Direct-Control Autogiro would seem to give promise that it may also prove useful as a troop-transport, air-ambulance, or stores-carrier. Its potential naval uses for local reconnaissance, observation of fire, and anti-submarine work would also appear to merit trials. It may provide the solution of the problem of flying-off and landing-on ship-borne aircraft without the complications of catapults and capacious landing decks.—EDITOR.

NOTABLE ARMY HORSES

By J. PAINE.

" And some there be which have no memorial :
Who are perished as though they had not been."
Ecclesiasticus xliv, 9.

THE Army horse has been the subject of innumerable anecdotes and has figured in countless battle paintings. Many are familiar with the quaint picture of General Lake and his son at the battle of Laswari, that almost-forgotten engagement in the Mahratta War of over a century ago. But how many could tell the name of the fallen charger in that painting? It is " Old Port," a beautiful Arab presented to Lake by the Marquis Wellesley. The artist has depicted the General's son, Major Lake, offering his own horse to his father, who at first refused, but, after some entreaty, consented to mount. Apart from the circumstances of his death after faithful service rendered, there is not much to record about " Old Port," so we can turn to a very different type of steed acquired by a soldier in the 'sixties.

" Lottery," so christened by his owner, was a very shapely Maori chestnut, purchased during a lull in the New Zealand War by Major (later General Sir) George Greaves, who hearing that his brother-officers had arranged a steeplechase, started looking about for an animal to ride himself. While the fences were being put in position, a Maori rode up bare-backed on this chestnut, whose bridle was a bit of rope tied round his lower jaw. With the Maori on his back the horse cleared all the fences in fine style. Greaves decided to have him and gave his owner twenty sovereigns for him. The money was well spent, since Greaves won the garrison steeplechase on " Lottery " a few days later. He was an extremely clever animal and managed to win everything he was entered for; he never made a mistake or put his rider down. He could swim like a duck, and his owner, who always rode him on a snaffle, used to swim him for a couple of hours in the sea each day. Unfortunately, he could not be taken to England, and was sold for seventy pounds, though he was well worth two hundred, and won a big race a few days after Greaves parted with him. Another horse ridden by the same officer in this campaign was famous for going long distances,

and on one occasion achieved a seventy-mile stretch. Greaves rode, saddle and all, twelve stone in those days.

The late General Sir Henry Sclater, when serving as a Lieutenant in the Royal Horse Artillery at Aldershot in the early 'eighties, had a handsome charger, but she was useless for anything except " charging." Another artillery officer, Lieutenant (afterwards Major-General Sir) John Adye, purchased her from Sclater and tried her with hounds, but as she insisted on going straight through the fences, instead of over them, the horse and her new owner did not get on very well together. Adye had better sport with his second charger, which he afterwards sold to a Cairo pasha who wished to breed from her. After serving in the Egyptian campaign half a century ago, this same officer accompanied his father as aide-de-camp to Gibraltar, and it was whilst there that he won a race on a white barb horse which was never expected to win. Adye's father, General Sir John Miller Adye, who died in 1900, was Governor of the Rock and used to ride this horse on parade. The late General Adye is one of the principal mounted figures in Lady Butler's well-known Royal Academy picture, " Tel-el-Kebir—After the Battle," depicting Wolseley's staff on the canal bridge in the rear of Arabi's camp. The portraits of many notable Army horses and their distinguished riders of the Victorian era will be recognised in the battle paintings of this artist.

The mention of Sclater and the two Adyes brings to mind another well-known artillery officer, Major-General Sir Edward S. May, whose chargers are deserving of passing attention. When serving as a subaltern with his battery at Topsham Barracks, Exeter, fifty years ago, May had a thoroughbred mare called " Columbine." She used to step up to her chin, an action which favoured her in the eyes of the Battery Commander, Major Joe Talbot, a great coachman in his day and considered the best horsemaster in the R.A. But the pride of this particular battery was a beautiful bay horse called " Roulette," who, before being broken in as a charger, won the Union Jack Stakes at Liverpool, ran in the City and Suburban and the Hunt Cup at Ascot, and had only been beaten by a neck in the Great Yorkshire Handicap. When tennis parties were held at the mess of that battery, " Roulette " was invariably led out and exhibited, for the benefit of the ladies. General May, who has pleasant recollections of having ridden this horse in the absence of the brother-subaltern who owned it, doubts if many officers of his regiment could ever have ridden " a horse of such pedigree and performance, fit and sound in every respect, as a charger."

It was in the 'eighties that the 10th Hussars came into prominence on two occasions—in 1887 when the Grand Military Gold Cup at

Sandown was won by one of its officers, Captain Fisher, on his own horse, " Dalesman," and, in the following year, when another officer of the regiment, Lieutenant Baird, won the Grand National on " Playfair." Nine years ago the 10th was commanded by the late Brigadier Malise Graham, whose successes with his twenty-four-year old " Bronco " are too well known to need recapitulation here.

Army horses and mules live very often to a great age, in spite of the campaigns they serve through. Two years ago the Queen Victoria's Own Madras Sappers and Miners held a reunion of their pensioners to celebrate the hundred-and-fiftieth anniversary of the raising of the corps, and one of the pensioners was an ancient grey mule with a wonderful record of service. This animal must have been five or more years of age when he joined the corps in 1891, so he must now be at least forty-seven years old. He first saw active service in Chitral, 1895, and afterwards served in the Tirah, Malakand, 1897, Tibet, 1903, and the Abor Survey of 1911. In the late War he accompanied the Indian Contingent to Egypt and thence to Palestine, being present at the defence of the Suez Canal and the battles of Gaza and Sharon. Since 1922 he has roamed at large in peaceful retirement in the lines of the field troop at Bangalore. Sometimes he visits the troop parades and occasionally pursues an exercise party or a ride for a considerable distance. Although he rarely strays far from his home for long, this mule still possesses great energy and is said to chuck a buck and a kick which many a two-year-old would envy.

Anecdotes concerning horses in the Great War are endless, but before recounting any of these a word must be said for those horses who answered their last call in South Africa. The lines which appear at the head of this paper are particularly applicable to the horses who fell in almost all campaigns, but in the case of the Boer War one can cite an exception. Standing to this day in Port Elizabeth, South Africa, high up above the town, is a very beautiful memorial bearing the following inscription : " The greatness of a nation consists not so much in the number of its people—or the extent of its territories—as in the extent and justice of its compassion. Erected by public subscription in recognition of the services of the gallant animals which perished in the Anglo-Boer War, 1899–1902."

Shortly after the Boer War, Major Yeats-Brown joined the 17th Cavalry, Indian Army, and acquired the best charger he ever owned, a bright bay, country-bred out of an Arab mare by a thoroughbred English stallion. The horse came to an untimely end pigsticking, and his owner devoted a touching chapter to the death of " The Devil," as he was styled, in his " Bengal Lancer." The very inkwell used in the

writing of these pages was one of "The Devil's" hoofs. The body of the horse was burned and scattered in the Ganges, after which his owner lost all interest in pigsticking and, as he writes, "with the wail of his syce sounding in my ears, I rode away from that good life for ever." This rather odd name of "The Devil" was borne by the mount of another Indian cavalry officer who, like "Bengal Lancer," served in the late War. But Army horses get dubbed with queer names: "By Jingo," for instance, was the name of the horse which won the Prince of Wales' Cup at last year's Royal Tournament, the rider being a subaltern of the 4/7th Dragoon Guards.

The records of a few horses who survived the European War are worthy of mention. Major-General[1] J. E. B. Seely's famous charger, "Warrior," for instance, who recently celebrated his twenty-first birthday at Mottiston, in the Isle of Wight. "Warrior" bore a charmed life during the Great War, in which he had many narrow escapes, and after returning from one of the worst battles on the Western Front, actually won the Isle of Wight Point-to-Point Race. He is but one of several old war horses now spending their last days in well-earned rest in the country.

Separated, but also in happy homes, were seven black horses, who went through the War on the Western Front as a gun team and whose average age was twenty-five. The seventh horse was Number One's charger. The team left St. John's Wood Barracks in 1914 with "F" Battery, Royal Horse Artillery, which formed part of the Expeditionary Force. It seems scarcely credible that the doughty seven should have served throughout the War and returned to England in 1919 still together and unscathed. They went through the Mons retreat, were at the Marne, Aisne, Neuve Chapelle, the second battle of Ypres, Armentieres, the two battles of the Somme, the retreat of March, 1918, and the final advance. Prior to their retirement ten years ago, these seven horses were each presented with the three War medals. They appeared at Olympia in 1920, and in the same year drew the gun-carriage which conveyed the remains of the Unknown Warrior to Westminster Abbey. These horses must not be confused with the two chestnuts of "E" Battery, R.H.A., who served through the War and were in the lead of the gun-team which took the regimental wreath to the Royal Artillery War Memorial on the occasion of its unveiling at Hyde Park Corner eight years ago. Another old artillery horse, whose portrait was painted by Lucy Kemp Welch, "David," served through the South African War, and was posted in 1902 to the 107th Battery, Royal Field Artillery. As a wheeler in a gun team he accompanied that battery

[1] Now Lord Mottiston.

to France in 1914 and served with it throughout the War. Towards the end of the campaign he became an orderly's horse. He used to display four wound stripes, and was renowned for his coolness under fire. At the end of the War "David" was entitled not only to the five medals for the two campaigns he had survived, but also to the Long Service and Good Conduct Medal.

Two years prior to the outbreak of the Great War, the N.C.O's. Steeplechase at the Cavalry School at Netheravon was won by B. 176, the horse of a sergeant of the 4th Dragoon Guards. This horse then came into the possession of the present Major-General A. Solly-Flood, who hunted him regularly with the Beaufort hounds and obtained second place on him in the Beaufort Heavyweight. He went through the War with this officer and was badly wounded on two occasions. In Germany in 1919 he shared with his rider the honour of winning four jumping prizes. Since the War he carried his owner well to hounds with the Monmouthshire and the Cheshire Hunts. Five years ago, when the General was ordered to India, having grown too heavy for the animal, he found a good home for him. A few years ago the General's Christmas card to the Sergeants' Mess of the 4/7th Dragoon Guards was a portrait of this charger. The Life Guards possessed a magnificent drum horse, owned by the regiment since the War, which unfortunately had to be destroyed three years ago; its portrait was the picture of the year at the Royal Academy eleven years ago.

To Horse Show enthusiasts "Sea Count" needs no introduction. The rather odd name of this horse is supposed to have originated in the following manner. When his number, C.123, was telephoned over at the end of a list of entries for a jumping competition, the individual at the other end asked for the last name to be repeated as he did not catch it. The conversation proceeded something like this: "C," "Yes." "Count, one, two, three." "Right, I've got it." But when the card was printed C. 123 was shown as "Sea Count," and that remained his name. So the story goes, but an officer of "Sea Count's" first regiment, in a recent letter to a Service journal, gave the name of the officer who christened the horse, stating that the telephonic origin of the name was a myth. A bay horse with zebra marking on his forelegs, "Sea Count" has been described as an ideal highwayman's horse, born two centuries too late. Across country he was a wonderful animal, and at the end of a long day was ready to start again. He is over twenty-one years of age, and was originally in the 14th/20th Hussars, but in 1923 was transferred to the 1st King's Dragoon Guards. He came to the new regiment with a great reputation, since he had won the Rhine Army Horse Show Championship Jumping and had carried

off many prizes at Inter-Allied Horse Shows. During the three years the K.D.G's were on the Rhine, "Sea Count" twice again won the Championship at Rhine Army Horse Shows. He was one of the team which represented the British at the International Horse Show at Strasbourg, winning the Coupe des Nations from France, Belgium and Holland. The Brooks Bryce Cup at Olympia, the Coronation Cup at Richmond and the King's Cup at the Royal Tournament were all won by "Sea Count" after his return from the Rhine. For three years running he was in the winning British team at Olympia, and at Dublin a few years ago he won the prize for best individual performance. For five years in succession he has won the Duke of York's Cup at Richmond. Such are a few of his many achievements. With the death a short while ago of Captain W. H. Muir, M.C., of the King's Dragoon Guards, the country lost one of its most brilliant exponents of the art of show jumping, and this meant to "Sea Count" the loss of his master. Since losing his rider the horse has been in the possession of an officer of the Royal Scots Greys, Major J. H. Dudgeon, M.C., who rode him at Olympia last year.

During the last few years several notable Army horses have died. Soldiers and sportsmen learnt with regret a short while back of the death of "Combined Training," the old charger of Brigadier Geoffrey Brooke. All horse lovers are familiar with his record. Another veteran of the Great War who died not so long ago was the beautiful dark-brown gelding which the late Field-Marshal Earl Haig rode regularly in France during the last three years of the War; in the year following the Armistice Earl Haig rode the same charger through Paris in the French Victory March and through London in our own Victory March.

THE INTERNATIONAL SITUATION

THE TREATY OF VERSAILLES AND ITS EFFECTS

By MAJOR E. W. POLSON NEWMAN, B.A., F.R.G.S.

IN reviewing the origin of the Treaty of Versailles and its effect on the international situation to-day, perhaps the first point to mention is that it is impossible for the present generation to judge the Peace Conference of Paris in its correct perspective. This may make it somewhat easier to realise the perplexing and uncertain landmarks on which the delegates had to rely in a fog of political and psychological reactions. The Peace Conference had to face an almost superhuman task at a time when men's minds were warped by four years of the most unusual conditions that the world has ever seen. As is usual, this resulted in confusions of purpose, which took different shapes: that of President Wilson took the form of the "Fourteen Points." The combined perplexities of the Allied Powers were apparent from the fact that they trusted and believed in President Wilson, who was responsible for the establishment of peace by treaty. By obtaining the consent of the Allies to the "Fourteen Points" as a basis for the cessation of hostilities, this idealistic peacemaker not only committed the victors to conditions in principle which could not possibly be carried out in detail, but he also introduced a basis of peace cutting right across secret treaties on the strength of which certain Powers joined the Allied side. Hence the Peace Conference had to produce a treaty of compromise between self-determination, equality of nations, etc., on the one side, and the secret treaties, expediency, etc., on the other. The result was an instrument of a hypocritical appearance, although hypocrisy as an actual motive is difficult to substantiate. It is much more likely that the so-called hypocrisy of the treaty is a feature unavoidable owing to circumstances, some of which have been stated. This, however, does not imply that the circumstances were altogether unavoidable; for there was no necessity to attempt to apply Wilsonian principles as they stood to a series of conditions, in many respects unalterable, thereby establishing an unstabilising confusion of ideas, and at the same time committing the Allies to policies with inexpedient potentialities in the interests of lasting peace.

Had the Wilsonian doctrines not intervened, and had the making of peace rested with the Allied military authorities, peace would have been *dictated* in Berlin instead of being *negotiated* in Paris, and there is good reason to believe that the result would have been much more satisfactory from all points of view. Soldiers can seldom be accused of injustice, while their professional sense of chivalry towards a defeated enemy tends to preclude the various forms of bad feeling to which civilians—officials as well as private individuals—are usually most susceptible. Not only would such a course have avoided the immense difficulty and doubtful honesty of modifying the alleged conditions of the Armistice in order to meet reality, but it would have been much more understandable to the German mind, besides being proof against all the accusations of non-fulfilment which have been hurled at the Allies ever since the treaty was signed. The persistent accusation of "War Guilt," levelled at the Germans, was no special reason for applying penalties, least of all for making peace by means of a diplomatically negotiated treaty. It is usual to sentence the guilty, and not to discuss with them their terms of punishment. The fact, however, that has to be borne in mind is that the Treaty of Versailles was dictated under the camouflage of diplomatic negotiation. Consequently, it possessed none of the advantages of a military ultimatum and comparatively few of the benefits of bilateral agreement, with the result that Europe of to-day bristles with grievances based on alleged injustice in the application of the principles declared to be the basis of the peace settlement. These grievances have naturally produced efforts to obtain their redress, which in turn constitutes a potential cause of future war. Such is, roughly, the outcome of the introduction of the Wilsonian doctrine and peace by diplomacy, contrasted with the military dictation of simple, straightforward and practical peace terms, from which there is no redress and no alternative to execution of the most definite obligations.

The obligations imposed upon Germany fall under the headings of territorial changes, armament restrictions, and financial impositions. Among the territorial losses incurred by Germany are the "Polish corridor" and Free City of Danzig; Memel; part of Upper Silesia; a large part of West Prussia including Posen; Alsace-Lorraine; and the German colonies. As the question of Alsace-Lorraine may be regarded as closed, the great outstanding matter in connection with Germany is that of her eastern frontiers which, together with similar questions with regard to other ex-enemy countries, has had the effect of dividing Europe once more into two opposing groups of Powers. There are, on the one side, those who insist on treaty revision, and on the other those who are determined to safeguard the *status quo* as the

only means of keeping their newly acquired possessions. Although some of the claims under this heading cannot be justified, there are also cases of grave injustice urgently calling for attention. These injustices, in as much as they constitute potential causes of war, must be eliminated before any general degree of disarmament is possible.

Germany was officially restricted by treaty to an army of 100,000 men of all ranks, and she was not allowed to possess certain forms of armament including military aircraft. This forced inequality of armaments, in view of her grave territorial losses, and the fact that the *status quo* Powers had failed to comply with the understanding that they should disarm gradually to Germany's level, produced the German demand for equality at the Disarmament Conference. This, together with a deadlock at Geneva arising out of a desire on both sides to possess armaments, either for the redress of grievances or to protect newly acquired territory, brought disarmament and treaty revision into close interrelation at the Rome meeting between Signor Mussolini and Mr. MacDonald, when a declaration was made to the world that treaty revision must precede any substantial degree of disarmament.

On the financial side, Germany had to pay Reparations which seriously affected the whole economic system of Europe, led to the French occupation of the Ruhr in 1923-24, and was a substantial contribution to the economic crisis through which the world is now passing. It was only at Lausanne, in July of last year, that the Allied Powers realised the wisdom of cancelling the entire Reparations schedule. Unfortunately, much mischief had already been done owing to the political reactions to economic depression, so that all three factors, territorial, armaments, and financial, are responsible for the present Hitler *régime* in Germany.

A political revolution has taken place in Germany, which may in one sense be regarded as a strong swing of the pendulum following the complete failure of parliamentary government on democratic lines, and in another sense as a definite result of the conditions imposed by the peace treaty. In 1918, the German nation, overcome by defeat, with their Kaiser a fugitive in Holland, with their army demoralised and their navy confined to the waters of Scapa Flow, were at a loss to know which way to turn; and, swept on by the flowing tide of post-war democracy, first rallied round anyone they could find, and finally found their footing under the presidency of their veteran Field-Marshal. But of all the countries in which post-war democracy has failed Germany is the most glaring example; and it has long been obvious that the German people would sooner or later throw over a form of government adopted in despair, and grasp at something more in harmony with their national

characteristics. Moreover, Germany has come through a long period of national repression, in which most of her natural instincts have been bottled up as a result of the conditions imposed upon her, and this has entailed a considerable loss of self-respect. As time passed, the conditions of life of the majority of the people became worse and worse, partly owing to the world economic depression and partly to Germany's special position under the treaties. As this national depreciation progressed, Hitler clearly foresaw an opportunity when he could apply to one of the most susceptible features of the German character the full force of his demagogic and almost hypnotic influence. He believed that by appealing to the German people's love of discipline in general and soldiering in particular, which had so long been denied them, he could rouse them to re-adopt the true spirit of the Fatherland, as defined by President Hindenburg in the Garrison Church at Potsdam. And his effort was greatly facilitated by the contention that the greater part of Germany's misfortunes were directly due to the humiliating burdens of the peace treaty, as well as by the fact that people of all classes were ready to support any policy holding out hope of relief from prolonged economic distress. With the occasion carefully prepared, Hitler shot his bolt, and for the present he has completely captivated the German people.

While Hitler's plans for national reconstruction may be primarily intended for internal purposes, it is unfortunate that the line of action best suited to the German mind happens to be easily transformable into an aggressive organization. When labour has been conscripted, industry organized and rationalized on a national basis—and Hitler's scheme in other directions is well under way—it will not require much time or labour to transform the whole into a formidable military organism. Indeed, it is difficult to see any reason why the economic re-organization of Germany's man-power and reconstruction of her material should not actually form the first stages of general re-armament and gradual mobilization, although neither need assume a definite military aspect until they are far advanced. There is no reason to doubt Hitler's pacific intentions at present, for Germany is not now in a position to go to war with any prospects of success—a fact that is fully realized by the senior officers of the *Reichswehr*. But, when Germany is prepared, Hitler's intentions may be very different, always provided that he is still in the position to have any intentions. The point however, is that the present situation in Germany is pregnant with aggressive possibilities.

The Germans are undoubtedly concentrating their attention, on the military side, on building up a strong and efficient preparatory system, ready for expansion and development at the appropriate time. As they

have no money to buy war material, they are organizing their national system on a more or less disguised military basis. As far as man-power is concerned, a thorough method of military training is already established. The *Reichswehr*, which is merely a cadre of very efficient officers and N.C.O's, is responsible for staff and instructional duties, and is relieved of everything else by the Nazi S.S. and S.A. troops. Every German boy is trained from the earliest school age in a certain amount of semi-military work. As he grows older, he is absorbed in civilian occupation and has to serve under the system of labour conscription, which is merely military conscription under another name. He then joins a rowing, rifle, sports or athletic club, where he has to give a definite amount of time to *Wehrsport* (military training) under efficient instructors. Provision is also made for maintaining efficiency according to civilian occupations. As mobilization plans are in the hands of the Nazi irregular troops, the *Reichswehr* cannot be accused of transgressing the treaty conditions. Indeed, the *Reichswehr* itself has carried out the impositions of the treaty most conscientiously, as all the transgressions have been undertaken by others. While it is generally admitted by officers of the old army that the *Reichswehr* officers are more efficient than they were, there is little doubt that they are the most efficient officers in the world to-day. With regard to arms, those in the possession of the Nazi troops consist partly of rifles unearthed from secret stores, and partly of small arms taken from the Communists. The Germans have a good supply of machine guns, and possibly also of rifles, as replacement is permitted by the treaty, and a rifle or machine gun ceases to be such when taken to pieces, oiled and stored away. In this way it is possible to replace large numbers without technically infringing the treaty. As far as heavy war material is concerned, the industrial system is being so organized as to be prepared to manufacture the heavier weapons at short notice, little alteration of plant being necessary in most cases.

While it is natural that the Germans should concentrate their attention on their land forces, they have by no means neglected their sea power. Although the German navy to-day is mainly composed of obsolete ships, such as the " Schleswig-Holstein," the German yards have succeeded in producing a formidable novelty in speed and gun-power. The " pocket battleship," which represents the maximum fighting qualities allowed to Germany, combines the greatest mobility and the greatest relative power of offensive action. Hence, the German navy can no longer be regarded as a negligible factor.

In the matter of aviation, the fact that Germany is not permitted by the treaty to possess military aircraft has merely led to the development of a highly efficient civil air service in possession of large numbers of

machines, most of which are transformable into fighting and bombing aeroplanes. Consequently, the disarmament of Germany is somewhat of a delusion, and a combination of national policy and armament facts point to the conclusion that she intends to revise the Treaty of Versailles by force, if no other satisfactory settlement is forthcoming in the comparatively near future—possibly in the next five years.

Meanwhile, treaty revision is the only means of averting resort to force. Germany's most urgent demand is that the "Polish corridor" and the Free State of Danzig should be returned; next comes the recovery of losses in Upper Silesia; and finally the restoration of the German colonies. For the corridor there is at present no solution, although future years may produce a possible way out in connection with the Baltic States. In Upper Silesia there seems little doubt that this whole industrial and densely populated area should belong to either Germany or Poland, yet there is no possible solution in sight. Germany, with a dense and enterprising population, is the only great Power without colonies, and the Germans definitely want to develop Africa in the same way as Great Britain, France and Italy, Belgium and Portugal.[1] Whatever the justification for these various demands, there are certain aspects of the *status quo* where Germany has, in the opinion of most people who have studied these questions objectively, a very legitimate grievance. Indeed, the necessity for treaty revision had become so manifest at the Rome meeting that for a time it entered the sphere of practical politics. Hitler's aggressive attitude, however, and the means he used for carrying out his policies, became a most disturbing factor in Europe, with the result that Germany looks like defeating her own ends, and treaty revision has had to be pigeon-holed for the present. Yet, one of two things must happen in course of time. Either there must be revision of the Treaty of Versailles, or the outstanding questions will be settled by force.

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[1] German claims to colonial expansion were contained in a memorandum deposited with the chairman of the Economic Commission on 17th June, 1933, by Herr Hugenberg, one of the principal delegates to the Economic Conference. The memorandum demanded that Germany should be granted a colonial empire in Africa, from which her nationals would carry out works and enterprises in all parts of that continent, which—it was claimed—would otherwise never be undertaken. A suggestion, also contained in the memorandum, that overcrowded Germans should colonize new areas where they would undertake works of peace, was regarded as an implication that they should be allowed to colonize Russia, and caused an immediate outcry in the Soviet Press.

Directly after publication of this document it was explained that it embodied only the personal views of Herr Hugenberg, and not necessarily those of the German Government.—EDITOR.

A certain body of British opinion opposes treaty revision, partly on the grounds that it would be a dangerous experiment, and partly because they fear any increase of Germany's strength. A much greater and more influential number of people believe that justice demands such a course, and that courageous action is the only way to peace with any degree of permanence, and with a prospect of security, confidence, and co-operation between the nations. Great Britain, however, strongly disfavours a wholesale reorganization of frontiers and political conditions in Europe; and the British people would never consent to an attempt to supersede the League of Nations by imposing revisionist conditions upon smaller nations without their consent. Such a policy is to the British mind unthinkable. But it is equally unthinkable that Europe should permit the continuance of such international absurdities as must obviously lead to war, and have already made disarmament practically impossible in any general sense of the term. The question must be treated in the right way and at the right time. While the former implies the full participation and consent of all the interested parties, the latter excludes the opening of the question when the political atmosphere is disturbed by the policy of any of the nations concerned. Hence, as far as Germany is concerned, the application of treaty revision finds no favour in Great Britain at present. The time factor is supremely important. Will circumstances be favourable to peaceful revision before Germany is prepared to resort to force? There is also the consideration that the latter course may hold out better prospects of satisfaction. In any case, resort to force by Germany would meet with the very strongest opposition in Great Britain.

NOTE.—Two important publications dealing with this subject—"Peace Making 1919," by Harold Nicolson, and "Some Memories of the Peace Conference," by Colonel R. H. Beadon—have been received, and will be reviewed in the November JOURNAL.—EDITOR.

THE DISARMAMENT CONFERENCE

THE British Plan for the reduction of armaments, which was presented to the Conference by Mr. Ramsay MacDonald, when he hastened to Geneva last March to prevent a complete breakdown, passed its first reading on 8th June. But this signifies little or nothing, for it is in no way binding, and, as a fact, there are at least fifteen or sixteen major points upon which no agreement has been reached at all. Originally it was arranged that the General Committee should meet on 3rd July to begin the second reading and take decisions on the Articles of the Draft. But, on 29th June it was agreed to adjourn the Conference until 16th October. The implication is that to have faced the delegates

with the necessity for making concrete decisions at the earlier date would have been to precipitate the collapse of the Conference.

Meanwhile, Mr. Henderson, as Chairman, has been engaged in a pilgrimage to Paris, Rome and Berlin with the object of negotiating direct with the various Governments and paving the way for a better understanding when the Conference reassembles in the autumn.

Support, in principle, for the British Plan was given by Mr. Norman Davis, the United States Special Envoy, in a speech at Geneva on 22nd May. In addition to the familiar references to the choice between the nations of the world going forward towards progressive disarmament and a reversion to unrestrained competition, he made certain statements of a more definite character as to the undertakings which America was prepared to give. He said that, although the United States are not bound by the Peace Treaties, they were ready to reduce their armaments, by international agreement, to a level strictly determined by the needs of self-defence, and implied that the Central Powers should no longer be tied by those treaties to " special treatment in armaments," but should be governed by the same principle as other nations. He stated, also, that they were willing to " consult with other States in case of a threat to peace, with a view to averting conflict." In the event of a State being found guilty of a breach of the peace in violation of international obligations, and if the United States concurred in the judgment as to the responsible and guilty party, they would " refrain from any action tending to defeat such collective effort which the States may thus make to restore peace "—a rather non-committal undertaking.[1] There would seem to have been somewhat pointed allusions to the German and French attitudes in Mr. Davies further remarks that " the problem with which we are faced cannot be solved if one nation insists on re-arming while the others disarm. The result would inevitably be another race in armaments " ; and " we are firmly convinced that in the long run . . . security can best be achieved through a controlled disarmament by which the military strength of the most heavily-armed nations is progressively reduced to a level such as that provided for in the peace treaties."

Subsequent conversations in Paris between the United States Envoy and representatives of the French Government do not appear to have improved the situation, however, and in certain essentials the attitude of the countries towards the problem of disarmament remains very different. The conversations were terminated by mutual consent.

[1] See " Definitions of Aggression," p. 623.

A certain body of British opinion opposes treaty revision, partly on the grounds that it would be a dangerous experiment, and partly because they fear any increase of Germany's strength. A much greater and more influential number of people believe that justice demands such a course, and that courageous action is the only way to peace with any degree of permanence, and with a prospect of security, confidence, and co-operation between the nations. Great Britain, however, strongly disfavours a wholesale reorganization of frontiers and political conditions in Europe; and the British people would never consent to an attempt to supersede the League of Nations by imposing revisionist conditions upon smaller nations without their consent. Such a policy is to the British mind unthinkable. But it is equally unthinkable that Europe should permit the continuance of such international absurdities as must obviously lead to war, and have already made disarmament practically impossible in any general sense of the term. The question must be treated in the right way and at the right time. While the former implies the full participation and consent of all the interested parties, the latter excludes the opening of the question when the political atmosphere is disturbed by the policy of any of the nations concerned. Hence, as far as Germany is concerned, the application of treaty revision finds no favour in Great Britain at present. The time factor is supremely important. Will circumstances be favourable to peaceful revision before Germany is prepared to resort to force? There is also the consideration that the latter course may hold out better prospects of satisfaction. In any case, resort to force by Germany would meet with the very strongest opposition in Great Britain.

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The German objections to Part II of the British Draft, mentioned in the "International Situation" of the May JOURNAL, had already threatened to bring further discussions to an abrupt conclusion, when the situation was rendered still more acute by the bellicose utterances of Herr von Papen on 13th May, subsequent to a statement by Lord Hailsham, in the House of Lords that he thought Germany would remain bound by the Treaty of Versailles and that any attempt to re-arm would be a breach of the Treaty and would bring into operation the sanctions it provided.

On 16th May, when tension was at its highest, Hitler delivered a carefully prepared speech to a special meeting of the Reichstag. In this he traced the cause of the crisis to the Peace Treaty which, he said, had not provided permanent solutions for the most important and most decisive questions. But he deprecated resort to war as a means for settling existing controversies. "Such madness must lead to collapse of the social and international order." Germany, he maintained, had fulfilled all the obligations laid on her for disarmament and had a fully justified moral claim on the other Powers to carry out the obligations devolving on them by the Treaties. He concluded by saying that Germany would tread no other path than that laid down by the treaties . . . they understood only too well that a military attack of any kind, even if it were successful, must lead to disaster.

The effect of this far more conciliatory pronouncement was to ease the situation appreciably, but there has been a generally expressed opinion that Herr Hitler's words must be followed by deeds before they can be accepted at their face value.

NAVAL ASPECTS.

Nothing very new has arisen out of the latest naval proposals, except that Japan now seems to be aiming at "parity" with Britain and the United States (*vide* NAVY NOTES, p. 645). She also complains that the British plan contains no provision for the abolition of aircraft carriers. There is little sign of progress towards an extension of the existing agreements regarding naval limitations to include France and Italy.

ARMY ASPECTS.

Although there is agreement on the principle that the defensive shall be strengthened by a reduction in offensive armaments, France and certain other Powers are not entirely reconciled to the total abolition of heavy tanks and guns whose main functions are to break down defensive fortifications. The proposal that these weapons should be pooled and placed under international control for use against an aggressor

still appeals to French ideas of security. On the other hand, there is a fairly general conviction that sixteen tons is an unduly high limit for "defensive" tanks; but the advent of the new high-velocity bullet may have a considerable influence on future tank design and weight.

Germany has withdrawn her amendment to Part II of the Draft, which caused so much confusion, and more recently has made a further concession by agreeing that the Reichswehr shall be transformed into a conscript army on a militia basis.

Air Aspects.

There are three main proposals for the limitation of air armaments:—

(1) The abolition of all bombing aircraft.
(2) The abolition of all naval and military aircraft, i.e., of all warlike aircraft.
(3) The effective international control of civil aircraft to prevent their being used for warlike purposes.

The first has met with the greatest measure of agreement; but Britain is desirous of retaining bombing aeroplanes purely for police purposes in outlying regions. In spite of the fact that it has been proved that the use of aeroplanes in co-operation with troops has materially facilitated the work of maintaining order in semi-civilized or savage countries, and that they do much to replace elaborate military expeditions costly in lives and money, considerable pressure is being put on the Government by idealists and theorists in this country to surrender this reservation. Already there are signs that the Government are weakening in their attitude and may be prepared to agree to the total abolition of all bombing aircraft if, by so doing, it would pave the way to a successful conclusion of a Disarmament Convention. What would be the effect on the Royal Air Force it would be premature to discuss.

Japan, while regarding the proposal as "a noble gesture," is unwilling to accept it without certain reservations. Her civil aviation, it is pointed out, is in a very early stage of development, and she would require to be assured that civil aircraft would not be used for military purposes in time of war. The country being especially liable to attack from the air, she could not agree to sacrifice this means of self-defence unless aircraft carriers were abolished.

The British Plan only proposes to limit naval and military aircraft to three tons weight, and leaves to the Permament Disarmament Committee the problem of drawing up a scheme for their complete abolition, which is to be conditional on the effective supervision of civil aircraft to prevent their misuse for military purposes. If it is assumed

that the usual "scrap of paper" does not constitute an "effective" prevention, it would seem to be beyond the wit of man to devise any system of international "supervision" which, in war time, would prevent civil aircraft being used for almost any and every form of warlike purpose, and the whole proposal resolves itself into a form of artificial disarmament, satisfactory to idealists in time of peace, but quite illusory as a method of abolishing aircraft as a means of attack in time of war.

It is a curious contrast that a world at peace tolerates a Conference engaged in a seemingly endless wrangle about war and the weapons of war, while a Conference which was called to save the nations from the financial cataclysm of that peace lasted but a few weeks and, to all intents and purposes, has ceased to function—or to matter!

THE FOUR-POWER PACT

THE Four-Power Pact was initiated by Mussolini and warmly supported by Mr. MacDonald, when the latter visited Rome on 18th–20th March last. It has reached the stage of being "initialled." It is surprising that this tentative agreement on its anæmic clauses should have been made the occasion for much enthusiasm in Rome.

The original draft has undergone very considerable modification as the result of strong protests on the part of the Little Entente against the implications that there might be a movement on foot to revise the territorial clauses of the Peace Treaty. In these objections they were powerfully supported by France. The subsequent negotiations were difficult, and but for the fact that those who had set the Pact in motion would have lost international prestige if it had met with a premature burial, it is doubtful whether it would have seen the light of day. Germany would certainly have killed it in its amended form, had it not been for the fact that she wished to make a good impression at the opening of the World Economic Conference, and probably consoled herself with the reflection that, at the present stage of her rejuvenation, one Pact more or less did not matter greatly.

As it is, the Pact is little more than a reiteration by Britain, France, Italy, and Germany of their obligations as members of the League of Nations and parties to the Locarno Treaty, the Briand-Kellogg Pact, the declaration of the renunciation of force proclaimed in the declaration signed at Geneva on 11th December, 1932, by the delegates to the Disarmament Conference and adopted by the Political Commission of that Conference on 2nd March, 1933, together with resolutions:—

(1) To consult, and to co-operate with all Powers to maintain peace.
(2) To " examine between themselves and without prejudice to decisions which can only be taken by the regular organs of the League of Nations, all proposals relating to methods and procedure calculated to give due effect " to the Articles of the Covenant, relating to territorial integrity, sanctions, and treaty revision.
(3) To ensure the success of the Disarmament Conference.
(4) To consult as regards economic questions.

The agreement is to be in force for ten years, and if before the end of the eighth year none of the parties shall have expressed a desire to terminate it, it shall be regarded as having been renewed indefinitely, subject to two years notice to terminate it by any one of the four parties.

DEFINITIONS OF AGGRESSION

A CONVENTION to define aggression was signed at the Soviet Embassy in London on 3rd July by the plenipotentiaries of Afghanistan, Estonia, Latvia, Persia, Poland, Rumania, Turkey and the Soviet Union. In substance the Convention is identical with the definitions adopted by the Security Committee of the Disarmament Conference. All the signatory countries, it will be noted, adjoin the borders of the Soviet Union either in Europe or Asia; but Finland, China and Manchukuo, who are also immediate neighbours, are not yet signatories.

An aggressor is defined as the State which shall be the first to have committed one of the following actions:—

(1) Declare war on another State.
(2) Invade by armed force the territory of another State, even without declaration of war.
(3) Attack by land, sea, or air forces, even without declaration of war, the territory, vessels, or flying machines of another State.
(4) Establish a naval blockade of the coasts or ports of another State.
(5) Accord support to armed bands, which, organized on its territory shall have invaded the territory of another State or refuse, in spite of the demands of the invaded State, to take on its own territory all the steps in its power to deprive the bandits aforesaid of all aid or protection.

No consideration of a political, military, economic, or any other character shall serve as an excuse or justification for aggression as provided under the above.

A letter from Mr. H. A. Smith to *The Times*, dated 30th May last, and reproduced here by courtesy of the Editor of that paper, shows what would have been the effect if these definitions had applied to the various beligerents since 1870 :—

> " The best way to test the value of abstract definitions is to apply them to facts within our knowledge. Judged by this test the definition of aggression produced at Geneva last week yields some curious results. For example, France appears to have been the aggressor in 1870, so that Geneva is now, in effect, asked to bestow its blessing upon the diplomacy of the Ems telegram. The United States becomes the aggressor against Spain in 1898, and Japan against Russia in 1904.
>
> " In the Great War the problem is more complicated, and the solution seems to depend upon whether we regard the War as a single whole or as an aggregate of particular wars. In the former case Austria-Hungary is clearly the aggressor and must bear the responsibility for the whole war. If, on the other hand, we sort the combatants out into pairs, varying results follow. Germany becomes the aggressor as against Belgium, but Great Britain is the aggressor as against Germany, since the definition tells us that ' no political, economic, or other consideration may serve as an excuse or justification for the aggression referred to.' The United States is clearly the aggressor in 1917, and I think I am right in saying that Haiti, Liberia, and Panama (*inter alios*) must also be numbered among the aggressors.
>
> " The mediæval canonists who vainly attempted to define the conditions of a ' just war ' never committed themselves to anything quite so absurd as this. The only possible result of adopting any abstract definition will be to make diplomacy in times of tension a kind of legal game in which the experts on each side will manœuvre to compel their opponents to take the first step which is technically wrong. Candidates for the diplomatic service will then presumably be compelled to take courses in Bismarck. A study of Abdul Hamid will also be very useful and perhaps even Machiavelli may come into his own again."

DEFAULTING MEMBERS OF THE LEAGUE

IN spite of urgent appeals, the number of nations in default with their payments to the League of Nations is increasing, and it is now owed a sum of nearly £1,000,000. Considerably less than half the contribution due for this year has been paid, and when the Assembly

meets in September, it will probably be faced with a greater deficit than ever before.

Germany, who has hitherto paid her contribution regularly, has placed a sum of about £578,000 at the disposal of the Secretary-General in a Berlin bank, but it is not available outside the home country.

China is the principal debtor, and owes the League about £409,000. Other persistent defaulters are Argentine, Bolivia, Chile, Liberia, Nicaragua, Paraguay, Uruguay, and Peru. The latter has lately indulged in a costly war, and has increased the League's expenditure, but has only paid one contribution since 1920, and now owes nearly £100,000.

These defaulting nations vote equally with those who, like Britain, are scrupulous in meeting their financial obligations.

THE FOREIGN POLICY OF THE SOVIET UNION

TWO commercial agreements were signed in Rome on 8th May between the Soviet Union and Italy.

As head of the Soviet Delegation to the World Economic Conference meeting in London, M. Litvinoff had some interviews with Sir John Simon during the last week in May, as the result of which the two British engineers serving sentences in Russia for alleged sabotage were released on 1st July, while the British trade embargo imposed on Russian trade in retaliation for the conviction of the two British engineers in Moscow was raised.

In addition the Soviet Union has concluded a Pact of non-aggression with Poland, whereupon Marshal Pilsudski received the Soviet Minister in Warsaw. This latter step is regarded as most significant of a new phase in Polish-Soviet relations.

At the Soviet Embassy in London on 3rd July there was completed and signed an elaborate convention between plenipotentiaries of Afghanistan, Estonia, Latvia, Persia, Poland, Rumania, Turkey and the Soviet Union.[1]

This was followed on the next day by the signature of a similar convention by representatives of Czecho-Slovakia, Yugoslavia, Lithuania and the Soviet Union.

The inner significance of these conventions has given rise to much speculation. But it may be assumed that they are not unconnected with the apprehension that has been felt throughout Eastern Europe concerning the future orientation of German policy as the result of the rise of

[1] See " Definitions of Aggression," p. 623.

Hitlerism. The most striking feature is the change in the Russian attitude towards the Rumanian possession of Bessarabia. It may be that developments in Germany have induced the Soviet Union to make concessions to Rumania in that quarter.

It is of further significance that no conventions of this nature have been mentioned as being contemplated between the Soviet Union and Manchukuo, China or Japan.

PROPOSED DANUBE BRIDGE.

FOR some time past intermittent discussions have taken place between the Governments of Rumania and Yugoslavia regarding the proposal to build a bridge across the River Danube, linking the railway systems of the two countries. From a statement recently made by the Yugoslav Ministry of Communications, it would appear that this project has now been definitely approved. It is proposed to build the new bridge at a spot about thirty miles below Turnu Severin, and a new railway line will be constructed to connect it with the existing Rumanian railway system. The cost of construction is estimated at about 500 million lei, which is to be shared between the two countries concerned.

CHINA AND JAPAN

AFTER the occupation by the Japanese of the province of Jehol, which has never been seriously challenged by Chinese armed action, a pause took place in the movements of the Japanese troops. Then from 10th April onwards they moved South of the Great Wall at several points, as stated in the last number of the JOURNAL. This advance was brought to a halt, apparently after some understanding had been arrived at with the local Chinese commanders. But for some unknown reason the Chinese moved northwards again, and seem even to have spread a report concerning an alleged victory over the Japanese. The latter thereupon lost no time in resuming their southward advance against the Chinese on 7th May By the 10th the Japanese 6th Division had occupied Yungping and by the 17th had reached Tangshan. This town is the seat of the Sino-British Kailan Mining Company, and anxiety was at once felt in British circles as to whether this Japanese step would jeopardize the Kailan coal mines. Meanwhile the Japanese 8th Division attacked the Chinese near the Kupeikow Pass, and moved yet further South, until they stood within 40 miles of Peking at Miyun. On the line Miyun—Tangshan the Japanese halted, although they pushed forward

a detachment of the 14th Independent Brigade to a point 15 miles East of Peking. Generally speaking, they held a line 50 miles to the North of the railway running from Peking to Tientsin.

The situation at this juncture seemed to grow more threatening, but by the 22nd May it was clear that the Japanese did not really propose to move any further on Peking, and finally, on 31st May, an armistice was signed at Tientsin between the Chinese General Ho Ying-chin and the Japanese Marshal Muto, commanding the Japanese Kwantung Army.[1]

The Armistice contained roughly the following provisos :—

(1) The Chinese army to remain West and South of the line Yenching—Tung-chow—Lutai ;

(2) The Japanese army to have the right to inspect the Chinese withdrawal by aeroplane or other means ;

(3) After confirmation of the Chinese withdrawal the Japanese also to withdraw to the Great Wall and northwards ;

(4) A force of Chinese police to be formed to maintain order in the area North and East of the agreed line ;

(5) The agreement to come into force as soon as signed.

The signature of this agreement is an event of some importance, as it had been maintained for some time past that there was no individual sufficiently strong in China to negotiate such a settlement.

Since the signing of this Armistice no further military operations have taken place. The Chinese withdrew, and the peace has been kept. It would now appear that nearly the whole of the Japanese troops also have been withdrawn to the North of the Great Wall, although some Manchukuo troops, commanded by Li Chi-chun seem to be still South of the Wall. The Japanese, however, deny any control of them. The Neutral Zone, created by the Armistice to the South of the Wall is to be policed by Chinese, as soon as all regular troops are withdrawn therefrom, and all irregulars disbanded. Until this measure is completed the Kailan Mining Company is considerably handicapped. At first the Chinese had removed one track of the railway whereby the Mining Company dispatched its coal to the sea. The rails, indeed, have been replaced, but it is still only possible for the Company to send five coal trains per day for shipping in place of the normal fifteen.

In other respects the situation in Manchuria and Jehol has remained generally and outwardly quiet. Some minor operations against brigands are said to be in progress in Jehol, but these are not important.

[1] Marshal Mutó has since died.

The main developments in Manchukuo itself are connected with railways. The (Japanese) South Manchurian Railway Company has assumed control of all the railways in Manchukuo, except the Chinese Eastern Railway which is still in Russian possession. By this action the Japanese have greatly consolidated their grip on this region. In particular they are aiming at adapting the whole railway system to military needs; not the least important scheme is the linking of Harbin with Kirin by rail, as this line would give Japan a shorter and more direct communication with Northern Manchuria.

The question of the Chinese Eastern Railway remains still unsolved. A conference on the subject assembled at Tokyo on 26th June between the Soviet Union and the Manchukuo government with the Japanese as intermediaries holding the scales. The Soviet Union wished to sell the line for £25,000,000; the Manchukuo representatives were offering £5,000,000. Nothing was decided.

The situation is most difficult. The Soviet Union have complained that the Japanese have forcibly used the Russian railway to move troops, while they have interfered in various ways with the working of the line and imprisoned Soviet citizens. The Japanese seem to be content to let things bide in the expectation that the Russians will find the railway a diminishing asset and sacrifice their ownership.

The consequences of this change of ownership would be far-reaching. The conversion of the Russian gauge to the normal Manchukuo track would render the Japanese hold on Manchuria still more complete, while it would separate Vladivostok from Siberia and render it untenable by the Russians in the event of hostilities with Manchukuo.

In China proper there is little to record. There is no question that Chinese feeling against the Japanese still runs very high, as is testified by the acrimony with which the boycott of Japanese goods is still being pursued. On the other hand, it is clear that Chiang Kai-shek and the Nanking government realize that the situation in Manchuria is irretrievably lost, so that some kind of understanding with Manchukuo—and necessarily Japan—must be discovered. But the intense desire to "save face" is preventing anything being done, while the mass of Chinamen would scarcely tolerate any peace being openly made with Japan. So the situation is allowed to drift on.

The result, as far as the Nanking government is concerned, has been that much opposition and criticism of Chiang Kai-shek is manifest. But Chiang still remains the strong man in China, and murmurings against him have not assumed any more definite shape even though his position may be weakened. In Canton a decision was taken to fight the Japanese,

and the XIXth Route Army was ordered to mobilize for the defence of China. This mobilization was not to be allowed to take place at Canton, but was ordered to be carried out at Hankow, nearer Nanking—against Chiang's desires. At Nanking it was felt that this Cantonese move was really intended as a threat to the Central Government. Nothing further, however, has materialized in that direction, partly because the moment is felt to be inopportune for any renewal of civil war, partly on account of the shortage of money. It seems that the move was really intended as a threat to the Central Government. Intrigues between Chiang Kai-shek and the " war-lords " who control Peking and the Northern Provinces continue. Chiang Kai-shek is said to be relying on a disbursement of American credits to the Cantonese and Northern " war-lords " to maintain the preponderance of the Nanking government. These American credits are the results of a loan of $50,000,000 which Mr. T. V. Soong has succeeded in negotiating in the U.S.A.

A renewal of Communist activity was noted in May, and the Red Armies were able to gain some successes and move on Nanking, largely as the result of the disinclination of the Cantonese to support Chiang Kai-shek. But the situation has not shown signs of growing worse; nothing new has transpired except that Chiang Kai-shek seems determined to maintain his hold over the Middle Yang-tze Valley.

A more serious rebellion has occurred in Sinkiang where the Moslem population has risen against the Chinese government, largely in hopes of obtaining a less corrupt form of government. It spread westwards until Kashgar was occupied by the rebels. Finally, after a curious interlude in which the Chinese authorities employed " White Russians " to fight for them, a *modus vivendi* has been found. The Russians vanished, and a mixed administration of Chinese, Tungans and Turkis has been set up and is working with the confidence of the local Moslems. At present there is no desire to secede from China.

CORRESPONDENCE

(Correspondence is invited on subjects which have been dealt with in the JOURNAL *or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the* JOURNAL.—EDITOR.)

THE ENGLISH ARCHER

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—The "tough archer of Crecy and Agincourt to sink into the worthless drunkard who succumbed to the levies of Joan of Arc." It would be interesting to know on what contemporary records the above opinion, in Colonel Maunsell's letter published in your February issue, is based.[1]

Crecy, fought in 1346, was followed by Poictiers in 1356. In 1373 the army sailing for France is described as the finest army Edward III ever turned out. Agincourt, fought in 1415, was followed by the victories of Crevant, Verneuil, and Reuvroi, in all of which the English were victorious against the far larger armies of the French and Scotch.

The expulsion of the English from France was probably due to the extreme difficulty of obtaining reinforcements from home; and also, in the reign of Henry VI, to the defection of Burgundy, as well as to dissensions among the English nobles in the reign of a child King.

Penrith. E. B. BURTON.

4th May, 1933.

To the above letter Colonel Maunsell has replied as follows:—

SIR,—With reference to Mr. Burton's query regarding the decline of the English archer in the days of Jeanne d'Arc, I would refer to Green's History of England. A study of Mr. Bernard Shaw's famous play is also of interest. Chaucer and Froissart give us an admirable picture of the nature of the wars of the day.

When Jeanne d'Arc appeared on the scene the English had been in occupation of France, or part of it, for well over sixty years. For the greater part of this period the land had been ravaged by bands of freebooters, and the aim of the English noble and his henchmen had become little more than plunder. When Henry V appeared, his strong hand checked this tendency to some extent, but so intense was the greed of gain that only fear of death kept the soldiery in the ranks.[2] His successor, who ruled in France when the Maid attained power, the Duke of Bedford, was able to effect the same when he himself was present, but, in his absence, the lust for plunder was, if possible, greater than ever. "If God had been a Captain nowadays, He too would have turned marauder," wrote a French knight.

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[1] See Correspondence, p. 176, R.U.S.I. JOURNAL for February, 1933.

[2] It is worth reading Shakespeare's Henry V and a few scenes in other historical plays in this connexion.

The English garrisons in France included a large number of men who had been in the country for years on end. They had married French women and were, often, content to settle down in comfort rather than wander about as freebooters; they had grown soft, and were, for a large part, drunkards. Indeed, they were following the normal habit of British long-service professional soldiery, whose deterioration was so commented upon when short service was first proposed in the past century.

When the Maid of Orleans made her first appearance, the success of the English had been, in the main, due to the spell of terror they had cast over France, for grave symptoms of indiscipline had been manifest for some years, and Bedford's efforts at tautening it up were resented. The French, it must be remembered, had never known what discipline was; both Crecy and Agincourt were largely battles of disciplined soldiery—hard, fit and admirably trained—against mobs. A notable characteristic of the French as a nation has always been their extraordinary susceptibility to the influence of a great leader and the amazing feats of which they have always proved themselves capable when such a person has appeared. It was so in this case. The disparity in the numbers of the English before Orleans was not, in all likelihood, any greater than it had been at Crecy, but the English had been before the place for six months and, as is not unusual in sieges, had probably become soft and out of condition. There is reason to assume that overconfidence resulted in gross slackness and that nearly the whole army was frequently drunk. The Maid's appeals roused the French and the spell was broken. We see, now, a not unusual feature with the English: failure led to a general stiffening. The rot, however, had gone too far. The death of Bedford, who had held things together, despite the defection of Burgundy and dissentions at home, commenced the final slide, which was to end, twenty years later, in the ousting of the English from France. Although there were many gallant feats of arms, anxiety to dispose of booty and secure a safe passage to England of hostages for ransom, deprived the victors of the fruits of victory.

It was at this period, according to my late friend, Rev. Gibbon, Fellow of Balliol College, Oxford, and Chaplain to the 4th Cavalry Division in France, who was an authority on this period and gave us many lectures whilst billeted at Crecy, that the drunkenness and slackness of many of the old soldiers commenced to display itself. Garrison after garrison fell, sometimes in a most disgraceful manner. Slipshod discipline, drink, soft living and senile fortress commandants had reduced once brave men to this state. Mr. Gibbon's statements were corroborated by the views of the old curé of Crecy, who produced and showed me many old French books on the period.

E. B. MAUNSELL, Colonel.

P.S.—I stated above that the English occupation had lasted sixty years; but the Kings of England had ruled over Aquitaine since the days of Henry II, nearly three hundred years before the province was lost. It is a reasonable assumption that posts like fortress commandant were given to old knights. In Shakespeare's Henry V the King promises Falstaff "advancement" should he reform, and it is well possible that there were many Falstaffs in the army at the end of the Hundred Years War. Fortescue hints that the Sir John Falsoffe of the Battle of the Herrings was one of the type. Lastly, it is worth noting that the French created a standing army in 1439, fourteen years before the final ejection of the English. In other words, discipline again proved itself against indiscipline; racial superiority was largely a myth.

E. B. M.

THE TRAINING OF THE ARMY FOR WAR

To the Editor of the R.U.S.I. Journal.

Sir,—In Brigadier Wavell's lecture on the above subject, the Lecturer propounded certain theories in regard to the training of the infantry serving at home. Many of these opinions will, no doubt, be concurred in by the majority of officers, but some other of his suggestions are highly debatable, as appeared from the ensuing discussion.

May I comment on two of these proposals only, in the hope of drawing attention to certain points which do not appear to have been brought out in the discussion?

1. *The Young Officer.*—The organization of divisional or command courses for young officers of one year's service appears unnecessary, and would not fulfil the desired purpose.

If the training of young officers at this period of their service is not carried out satisfactorily within a battalion, there is something radically wrong with the method employed in carrying out the training of that battalion. Under the present system, battalion commanders should be able to ensure that young officers receive all the instruction necessary at this period of their service. As the Lecturer says, the first year of an officer's career is already fairly crowded. By the time he has carried out drill, weapon training, some tactical exercises without troops, company and battalion training, learned company administration (a far larger subject than is usually realized), been through the course at the Small Arms School, and taken embarkation leave (if posted abroad), there is little time left for other courses. Moreover, it is at this period of his service—the most critical, perhaps, in his career—that it is particularly desirable for a young officer to remain with his battalion.

The disadvantages of taking out of the hands of the Commanding Officer the training of his officers appears to have been brought out fully in the discussion.

2. *The Pooling of Riflemen.*—The Lecturer advocates the pooling of all riflemen into one company for 6½ months in the year. In support of his proposal, the Lecturer quoted the school organization, whereby boys carry out their education by classes, and not by houses or dormitories. This analogy seems hardly a true one, as what the Lecturer really suggests is not education by different masters, but that a super-housemaster should educate the bulk of the school (i.e., the three rifle companies), and, in my opinion, this super-housemaster could be nobody else but the headmaster—namely, the battalion commander.

Further, there is a vast difference between a school—a purely academic institution—and a battalion—a fighting organization. The former does not mobilize, nor does it have to be prepared to move about and to operate as a unit. It is for this reason, presumably, that battalions are organized into companies, as, if turning out trained drafts were the only function of a home battalion, it might well be organized on different lines.

Our infantry is organized into battalions and companies, where command is delegated and responsibility fixed. The commanding officer is responsible for the efficiency of his battalion, and holds his company commanders responsible for the efficiency of their companies. It seems to me, therefore, that everything possible should be done to strengthen the hands of the commanding officer in his responsibility, and that we should avoid introducing systems of training or administration which set up any form of dual control, and divided responsibility.

Devonport.
9th June, 1933.

C. G. Liddell, Brigadier.
Commander, 8th Infantry Brigade.

THE FREEDOM OF THE SEAS

To the Editor of the R.U.S.I. Journal.

Sir,—In Commander G. S. Bowles' excellent lecture[1] and in the subsequent discussion, the main point of contention in this subject was hardly touched upon. We are all probably agreed that restrictions should be placed on sea-borne trade provided we have a superior fleet. But the superiority must be real. We depend more than any other nation on the access of supplies to our ports. Unfortunately, however, most of our approaches are by narrow channels—the Suez Canal, the Mediterranean, the Irish Sea, the North Sea—peculiarly vulnerable to new fighting elements, aerial and submarine. Have we the necessary superiority—naval and aerial—to deal with this deadly menace to our trade?

Commander Bowles bases most of his arguments on the Great War, when our strategical position was perfect, our numerical superiority overpowering, and our command of the sea surface complete to an extent previously undreamed. Yet even then we were within an ace of succumbing to starvation.

There is no sign at the moment that we shall have much superiority, or indeed any superiority, in any future war. Yet naval officers, while lamenting the dangerous weakness of our fleet, confidently recommend a policy only desirable when backed by a powerful Navy. The only sure shield is superior strength. If we discard that shield we must look for our preservation to suitable treaties and hope for the best in an imperfect world. And that, after all, is what we are asking everyone else to do.

"Brigadier."

June, 1933.

[1] See Lecture, "The Freedom of the Seas," R.U.S.I. Journal for May, 1933.

GENERAL SERVICE NOTES

FRANCE

AIR FORCE CONSTITUTION BILL.—France does not appear to be very happy in the higher administration of her fighting Services, which suffers from continual political changes. There has also been constant friction and reorganization ever since a Ministry of Air was created. With a view to overcoming the former and co-ordinating all arms, M. Tardieu, early in 1932, created a Ministry of Defence. This lasted only a few months and, on M. Herriot assuming office as Prime Minister, was promptly abolished in favour of three separate Ministries. In November of that year, it was found necessary to publish a further decree in order to define the respective spheres of responsibility of the Ministers of Marine and Air.[1]

In March, 1933, an Air Force Constitution Bill was finally passed by the Chamber of Deputies. By this Bill the Air Minister is charged :—

(i) With the organization, training, administration and mobilization of the active and reserve air forces, including those of the troops of occupation in extra-metropolitan territories subject, in the case of the Naval Air Service Afloat and the Naval Air Service Co-operation Units, to special arrangements made by inter-ministerial decree.

(ii) With the examination and control of air material and accessories, preparation for industrial mobilization in connection therewith, and the purchase of such material and accessories as are destined for the Air Force.

(iii) With the survey, establishment and operation of airways and air ports, the organization and control of public air transport, the meteorological and signal services, with the development and supervision of private flying.

(iv) With the drafting of air laws and the preparation of international agreements in connection therewith.

In order to carry out these duties the Air Minister has under his control :—

(i) A central administration.

(ii) The Technical Aeronautical Services and establishments and their personnel.

(iii) The Regional Air Navigation Services and establishments and their personnel.

(iv) The personnel, staffs, troops, services, schools and establishments of the Military Air Forces.

(v) The personnel, staffs, troops, services, schools and establishments of the Naval Air Forces—with the exception of the personnel and organs necessary for the employment of the air units based in ships and the personnel belonging to naval co-operation units.

(vi) The National Meteorological Office.

REORGANIZATION OF FRENCH AIR FORCE.—A decree relating to the general principles of the employment and organization of the Air Force was signed by the President of the Republic on 1st April, 1933. The Force is now to be known as

[1] See JOURNAL of February, 1933, p. 210.

the army of the air (*L'armée de l'air*), and is brought much more into line with the army as regards command, training and territorial organization.

In place of air forces strictly specialized for particular duties, the army of the air is to be organized, trained and inspected with the object of rendering it capable of taking part in air operations, in combined operations with the army and navy, and in territorial air defence.

The new organization, which does not include the Naval Air Force, is based on a regional air command for which purpose France has been divided into four air regions with headquarters at Metz, Paris, Tours and Lyons. The regional commanders are directly subordinate to the Inspector-General of the Air Force, who delegates certain of his responsibilities to specialist deputy Inspectors-General, who are the commanders designate of the various air formations in the event of a war. At present the air regions contain a variety of types of units, and so far no attempt has been made to group them according to their function. Functional co-ordination is the responsibility of the Specialist Deputy Inspectors-General. There are five of these Deputy Inspectors-General: the Deputy Inspector-General of the Metropolitan[1] Air Force, who is assisted by the Inspector of Light Air Defence; his inspectorate includes all bomber and fighter units; the Deputy Inspector-General of the Army Co-operation Forces of the Metropolis; the Deputy Inspector-General of the Overseas Air Forces; and lastly the Deputy Inspector-General of Air Force Schools.

The air regions are organized into Brigades, Establishments and Schools. The Brigades are sub-divided into *Escadres* (Wings), which are composed of a varying number of *Escadrilles* (Squadrons). For purely administrative purposes, a number of *Escadres* are grouped together under an Air Base.

THE NAVAL AIR FORCE.—The Naval Air Force is entirely distinct from the foregoing organization. It is divided into three branches: the Fleet Air Arm, the Naval Co-operation Units not afloat, and the Autonomous Naval Air Force. The first two branches are purely naval, the Air Minister is responsible only for *ab initio* flying training, equipment and the maintenance of shore bases; and even this duty is carried out by naval officers who form a special directorate at the Air Ministry. The Fleet Air Arm comprises all embarked aircraft and a few training aircraft which are maintained on shore. The Naval Co-operation Units not afloat include all shore-based reconnaissance units and a proportion of the torpedo-bomber units. The Autonomous Naval Air Force comes directly under the Air Minister. The personnel are at present seconded from the Navy, but they are eventually to be replaced by Air Force personnel. This force is composed of all shore-based fighter units and the remainder of the torpedo-bomber units.

CONSEIL SUPÉRIEUR DE L'AIR.—The following new members are introduced into the *Conseil Supérieur de l'Air* in an advisory capacity:—

(*a*) The Inspector-General of National Air Defence.
(*b*) Two representatives of the army:
  (i) The Inspector-General of the Army.
  (ii) The Chief of the General Staff of the Army.
(*c*) Two representatives of the navy:
  (i) The Chief of the Navy Staff.
  (ii) A member of the *Conseil Supérieur de la Marine* (appointed by the Minister of Marine).
(*d*) A representative of the Colonial Ministry:
  The General Officer Director of Military Services.

[1] Metropolis in French = Home Country.

When the council is called upon to give opinions on questions affecting the national air defence, the army, the navy or the colonies, the representative members will be allowed a vote in the council.

As a result of the above two measures, the liaison between the army and the army of the air will be considerably strengthened.

Direction des Fabrications d'Armement.—By a decree dated 29th April, 1933, a new directorate has been created which will be responsible for the manufacture of all armaments, munitions and war material both in peace and war, and for the preparation and speeding up of industrial mobilization. It revives in peace an organization which will fulfil, on a small scale, the role of the Ministry of Armament in the Great War. It will include various technical organizations formerly under the artillery and other directorates.

The services allotted to the new directorate will provisionally continue to be operated either by personnel belonging to, but seconded from, the artillery, or by officers of other arms having the necessary qualifications and similarly seconded.

SPAIN

Co-ordination of Air Services.—By a decree issued on 6th April, 1933, the Spanish Government authorized the formation of a Directorate-General of Aviation.

Hitherto, the air services of Spain have been branches of the navy and army respectively, each having its own air arm purely for co-operational purposes, there being no apparent intention of employing aircraft in an independent role. The present decree legislates for :—

(i) An independent air force (for bombardment purposes).
(ii) A defence aviation branch.
(iii) An army co-operation branch.
(iv) A naval co-operation branch.

The decree not only authorizes the formation of a Directorate-General of Aviation, which is to be responsible for civil as well as military aviation, but also sanctions the creation of a " Higher Air Council," whose functions, however, are not defined. This body is apparently quite distinct from the Directorate-General of Aviation, and although the Director-General of Aviation is to be one of the members, the Chiefs of Staff of both the army and the navy, as well as three political officials, are also members of this council.

In the matter of command it is of interest to note that the air forces are to be under a military or naval officer to be known as the " Chief of Air Forces." This officer is to have direct and full command of all branches of the air forces except that, for purposes of operations and discipline, the army and navy branches are to come under the military or naval command to which they are affiliated.

NAVY NOTES

GREAT BRITAIN

Flag Appointments.

Portsmouth Command.—Admiral Sir John D. Kelly, G.C.V.O., K.C.B., is to be Commander-in-Chief at Portsmouth, in succession to Admiral Sir Arthur K. Waistell, K.C.B., to date 17th January, 1934. Sir John Kelly is to be succeeded as Commander-in-Chief, Home Fleet, on 14th September by Admiral Sir William H. D. Boyle, K.C.B.

The Nore Command.—Vice-Admiral Hugh J. Tweedie, C.B., succeeded Admiral Sir Reginald Y. Tyrwhitt, Bt., G.C.B., D.S.O., D.C.L., as Commander-in-Chief, The Nore, on 16th May, 1933.

Admiral Commanding Reserves.—Vice-Admiral George K. Chetwode, C.B., C.B.E., is to be Admiral Commanding Reserves, in succession to Vice-Admiral Henry W. Parker, C.B., C.M.G., to date 5th October, 1933.

S. N. O., Yangtse.—Rear-Admiral Francis G. G. Chilton is to be Rear-Admiral and Senior Naval Officer, Yangtse, in succession to Rear-Admiral Richard A. S. Hill, C.B., C.B.E., to date 25th August, and to assume command about 23rd October, 1933.

Rear-Admiral, Gibraltar.—Rear-Admiral F. M. Austin succeeded Rear-Admiral T. N. James, C.B., M.V.O., as Rear-Admiral, Gibraltar, on 2nd May, 1933.

Commodore, Hong Kong.—Captain H. R. Marrack, D.S.C., was appointed Commodore in Charge of the Naval Establishments at Hong Kong, temporarily, *vice* Commodore E. McC. W. Lawrie, D.S.O., as from 5th May. Commodore Lawrie was invalided home, and died in London on 29th June. Captain Frank Elliott, O.B.E., was appointed Commodore in Charge, Hong Kong, and left London on 9th June.

Rear-Admiral, Malta.—Rear-Admiral Wilfred F. French, C.B., C.M.G., is to be Rear-Admiral in Charge, Malta, and Admiral Superintendent, H.M. Dockyard, Malta, in succession to Vice-Admiral the Hon. Matthew R. Best, C.B., D.S.O., M.V.O., to date 26th December, and to assume command about 22nd January, 1934.

Mediterranean Flotillas.—Rear-Admiral Andrew B. Cunningham, D.S.O., is to be Rear-Admiral (D) Commanding Destroyer Flotillas, Mediterranean Fleet, in succession to Rear-Admiral Frank F. Rose, C.B., D.S.O., to date 2nd December, and to assume command about 30th December, 1933.

Coast of Scotland.—Rear-Admiral E. J. Hardman-Jones, O.B.E., succeeded Rear-Admiral the Hon. W. S. Leveson-Gower, C.B., D.S.O., as Rear-Admiral and Commanding Officer, Coast of Scotland, on 12th July.

Personnel.

Promotion to Engineer Rear-Admiral.—By Orders in Council dated 7th October, 1931, and 1st October, 1932, it was approved that Captains,

Engineer Captains or Captains (E), and Surgeon Captains promoted to those ranks after the date of the first-named Order whom it has been decided not to employ in a higher rank should be retired in their existing ranks as soon as an officer below them on their respective lists is promoted. Such officers are granted retired pay on Rear-Admirals', Engineer or Surgeon Rear-Admirals' scale, subject to a maximum standard rate of £900 per annum, provided that they are qualified for promotion under such regulations as are from time to time in force.

The qualification for promotion of Captains and Surgeon Captains depends on service rendered in such ranks, and by a new Order in Council dated 26th June, 1933, the qualification for Engineer Captains or Captains (E) is likewise made dependent on service rendered in those ranks. These officers are to be qualified for promotion to Engineer Rear-Admiral or Rear-Admiral (E) if they have completed three years' full pay service in the rank of Engineer Captain or Captain (E). The qualification prescribed by Order-in-Council dated 17th May, 1867, viz., "long and meritorious service," is to be cancelled when the provisions of the new Order become operative.

OFFICERS' TRAVELLING.—From 1st May, in the interests of national economy, and in pursuance of a general decision of H.M. Government applying to all the Services of the Crown, officers of and below the rank and relative rank of Lieutenant-Commander, R.N., and Major, R.M., are allowed only third-class travelling by railway on duty within Great Britain and Northern Ireland, except when necessarily travelling in uniform.

LEAVE CONCESSION TICKETS.—The railway companies have agreed to the issue of third-class concession tickets when used in connection with leave to officers, R.N. and R.M., irrespective of rank, and to their wives (and children under 16 years of age when dependent upon and accompanying them). Officers and their families who so wish may continue to obtain first-class tickets at the existing reduced fares.

ENGINEERING COLLEGE TRAINING.—The period of training of engineer officers at the R.N.E. College, Keyham, is to be reduced from twelve to eleven terms. In order to expedite the inception of the change and to avoid the possibility of hardship to individual officers, it has been arranged that those who entered Keyham before September, 1931, will complete a course of twelve terms, but officers who entered Keyham in September, 1931, and subsequently will do only eleven terms. On and after April, 1935, when the first batch of officers to complete their training n eleven terms passes out, all officers will serve at sea as Sub-Lieutenants (E) until, at earliest, they have obtained their engine-room watch-keeping certificates. They will be advanced subsequently to the rank of Lieutenant (E) according to the promotion marks gained, the seniority being antedated where necessary.

"M.2" AWARDS.—On 8th June it was notified that reports of the salvage operations on H.M. submarine "M.2" had been considered by Their Lordships, who had noted with satisfaction and appreciation the manner in which this arduous work was performed by all engaged thereon. Their Lordships' appreciation was conveyed to Commander P. Ruck-Keene, in direct charge of the operations, and Mr. J. H. B. Chapman, Assistant Constructor, 1st class, who served as Constructor Lieutenant-Commander attached to H.M.S. "Alecto." Several other officers received Their Lordship's commendation. Two chief petty officers were awarded the Medal of the Order of the British Empire, with a gratuity. Twenty other ratings received advancement or additional seniority towards it, and twenty-five more had notations of valuable service made on their parchment certificates.

New Construction.

The 1930 Programme.—The three cruisers of the 1930 programme are the 'Achilles," at the Cammell Laird yard, Birkenhead; the "Orion," at Devonport Dockyard; and the "Neptune," at Portsmouth Dockyard. The "Achilles" is due to be completed on 5th October; the "Orion" on 24th January, 1934; and the "Neptune" in February, all for the Second Cruiser Squadron, Home Fleet.

The only other vessels outstanding of this programme are the submarines "Seahorse" and "Starfish," at Chatham Dockyard, to be completed on 29th September and 27th October respectively.

The 1931 Programme.—The keel was laid on 26th June of the "Amphion," the last of the three cruisers of the 1931 programme.

The sloop "Grimsby," the first unit of the 1931 programme to take the water, was launched at Devonport Dockyard on 19th July.

The three submarines of this programme, the "Severn," "Sea Lion" and "Shark," were laid down on 27th March, 16th May and 12th June respectively.

The following are the names and dates of laying down of the destroyers of this programme:—Denny and Bros., "Echo," 20th March, and "Eclipse," 22nd March; Hawthorn Leslie and Co., "Electra" and "Encounter," 15th March; Scotts' Shipbuilding and Engineering Co., "Escapade" and "Escort," 30th March; Swan Hunter and Wigham Richardson, "Esk" and "Express," 24th March. The flotilla leader "Exmouth" was laid down at Portsmouth Dockyard on 16th May, 1933.

The 1932 Programme.—Of the eight destroyers of this programme, all of which are being built by contract as usual, the "Forester" was laid down on 15th May, and the "Fury" on 19th May, both by J. Samuel White and Co., East Cowes. The "Fame" and "Firedrake" were laid down by the Parsons Marine Steam Turbine Company (hulls by Vickers-Armstrongs, Ltd.) in July. The "Fearless" was laid down on 17th July, and the "Foresight" on 31st July, both by Cammell Laird and Co., Birkenhead. The "Foxhound" and "Fortune" were due to be begun on 25th July and 21st August respectively.

The flotilla leader of this programme, H.M.S. "Faulknor," was laid down on 31st July by Messrs. Yarrow and Co., Scotstoun.

Exercises and Cruises.

Home Fleet Summer Cruise.—The Home Fleet under Admiral Sir John Kelly left its home ports on May 8–10 for Invergordon and Rosyth. The First Sea Lord, Admiral Sir Ernle Chatfield, paid an informal visit to the Fleet in Cromarty Firth at the end of May. A strategical exercise arranged for 23rd May had to be abandoned owing to fog. The Fleet concentrated at Scapa from 3rd to 10th June, where the annual pulling regatta was held, and the squadrons and flotillas afterwards separated for independent visits until returning to their home ports on 20th and 21st July. The "Nelson" and "Warspite" proceeded to Norway and Denmark respectively. A contingent including the "York," flagship of Rear-Admiral P. L. H. Noble; "Cairo," flagship of destroyers; with the 6th Destroyer Flotilla and 2nd Submarine Flotilla, visited Stockholm from 23rd June to 3rd July, and all except the "York" also visited Copenhagen from 5th to 17th July. A division of the 2nd Destroyer Flotilla visited Danzig, Gdynia, Tallinn and Odense.

MEDITERRANEAN FLEET CRUISE.—The Mediterranean Fleet under Admiral Sir William Fisher left Malta on 27th June for its first summer cruise to Adriatic ports. The whole Fleet visited Corfu until 4th July, and then divided up to proceed to various Italian, Greek and Yugoslav ports, including Trieste, Venice, Argostoli, Sibenik and Split. It was due to reassemble off Kotor (Cattaro) on 5th August for ten days before returning to Malta.

EAST INDIES.—The "Hawkins," flagship of Vice-Admiral M. E. Dunbar Nasmith, V.C., cruised in East African waters during June and July, while the "Enterprise" was at Colombo and the "Emerald" at home for large repairs. The duties of S.N.O., Persian gulf, were carried out by Captain E. C. Denison, M.V.O., in the "Bideford" while the S.N.O. was at Bombay for transfer to the "Shoreham" from the "Triad," which has been disposed of.

AMERICA STATION.—The "Norfolk," flagship of Vice-Admiral the Hon. R. A. R. P-E-E-Drax, and the "Danae," left Bermuda on 10th June to cruise in the St. Lawrence and off the South and West coasts of Newfoundland. The "Dauntless" left on 27th May, and the "Durban" on 1st July, to resume duty in the South American Division, the former going to the coasts of Colombia and Ecuador and the latter to Brazil. The "Dragon" proceeded through the Panama Canal to San Diego, California, and to ports in British Columbia. The sloop "Dundee" made a voyage up the Amazon, arriving at Manaos on 3rd June and Obidos on 10th June.

AFRICA STATION.—Following the departure of the "Cardiff" for home, Vice-Admiral E. R. G. R. Evans transferred his flag to the "Carlisle," and on 24th June arrived at Durban with that ship and the sloops "Daffodil," "Milford" and "Rochester." He returned to Simonstown in July in the "Rochester," the "Carlisle" continuing her cruise to East coast ports.

CHINA STATION.—Normal programmes were carried out by the ships in China, the vessels making use of the rest base at Wei-Hai-Wei as convenient. Admiral Sir Frederic Dreyer, in the "Kent," went up the Yangtse to Hankow, arriving on 20th May, and returned to Wei-Hai-Wei on 1st June. Cruisers and sloops have taken turns of a month's duty in rotation at Hankow, Shanghai, Nanking, and other points.

ORGANISATION AND DISTRIBUTION.

SECOND CRUISER SQUADRON.—The flag of the Rear-Admiral Commanding Second Cruiser Squadron, was transferred to the "York" at Scapa on 6th June, and the "Dorsetshire" left the same day for Devonport, arriving on the 10th, to prepare for service as flagship on the Africa Station. The new cruiser "Leander" returned to Plymouth on 5th May from a shake-down cruise to Gibraltar, and on 12th June proceeded to Portland. The flag of the R.A., 2nd C.S. was transferred to her in July on the return of the "York" from the Baltic cruise.

FLEET TARGET SERVICE.—The new netlayer "Guardian" was commissioned at Chatham on 13th June by Captain K. H. L. Mackenzie for special trials, and subsequent duty with the Home Fleet Target Service. The "Centurion" and "Shikari" were recommissioned at Portsmouth on 1st June, with Devonport crews, for further Fleet Target Service.

THIRD CRUISER SQUADRON.—This Squadron is in process of reconstruction, and during the past quarter has consisted of two "D" and two "C" class cruisers the "Delhi," "Despatch," "Ceres" and "Curlew." The "Curlew," Captain

B. C. Watson, D.S.O., left Malta in July for Chatham, where she was to pay off into reserve on 18th August. The "Ceres," Captain G. A. Scott, D.S.C., will leave the Squadron in October. The "Dauntless" and "Durban" from the South American Division will replace the "Curlew" and "Ceres" early in 1934.

AFRICA STATION.—The "Cardiff," Captain W. T. Makeig-Jones, left Simonstown on 30th May on her withdrawal from duty as flagship, Africa Station. The "Carlisle," Captain F. R. Barry, became flagship temporarily. The new cruiser "Dorsetshire" was recommissioned by Captain Makeig-Jones on 25th July to replace the "Cardiff."

EAST INDIES.—The "Emerald," Captain J. W. Clayton, arrived at Devonport on 7th June from the East Indies Station, to be taken in hand for large repairs. The "Colombo," from the Devonport Reserve, was commissioned at Chatham on 27th June by Captain C. E. B. Simeon to replace the "Emerald" temporarily.

MISCELLANEOUS.

NAVAL PRIZE FUND.—From the final residue of the Naval Prize Fund, the Board of Admiralty have granted £14,820 for the institution of a scheme for medical assistance to the wives and families of officers and men of the fleet stationed at Malta; £5,964 10s. for similar purposes at Gibraltar; £1,000 to the R.N. and R.M. Officers' Civil Employment Committee; and £3,480 17s. 9d. to the R.N. Benevolent Trust.

DEPOT SHIP RENAMED.—From 1st July, H.M.S. "Egmont," depot ship at Malta, was renamed H.M.S. "St. Angelo," after Fort St. Angelo. From 1856 to 1904 the depot-ship at Malta was known as the "Hibernia," when a change was made to "Egmont," as "Hibernia" became the name of a new battleship. The change to "St. Angelo" has been made because Fort St. Angelo has an illustrious history and played an important part in the siege of 1565. It has been much appreciated by the Maltese. To celebrate the change, the great bastions were floodlit with the new name in large letters at the bottom of the fort.

SCAPA FLOW SALVAGE FINISHED.—On 9th July, the ex-German battle cruiser "Von der Tann" was berthed at Rosyth for breaking up, having been towed keel uppermost from Scapa Flow. With her arrival, the salvage of the ex-German warships at Scapa came to an end, so far as the firm of Cox and Danks are concerned. In less than ten years, the firm has lost £10,000 in connection with this work, states Mr. E. F. Cox. Some 32 ships, including the 28,000-ton battle cruiser "Hindenburg," have been raised and towed to the breakers' yards. Ten ships still remain, but the firm has decided to leave them.

THE FLEET AIR ARM

AIR PILOTS' ALLOWANCES.—It has recently become necessary to make provision for the payment of allowances to commissioned officers of the R.N. and R.M. of the rank of Commander and Major respectively while attached to the R.A.F. for service with the Fleet Air Arm. An Order in Council published in the *Gazette* on 30th May provides that any Commander, R.N., or Major, R.M., holding an appointment appropriate to the rank of Squadron Leader or Wing Commander, R.A.F., ashore or afloat, is to receive an allowance corresponding to any duty allowance (e.g., command pay) which would be given to a Squadron Leader or Wing Commander, R.A.F., in the same post. Except when in receipt of the above allowance, the sum of 3s. 6d. a day is to be paid to officers after promotion to Commander, R.N., or Major, R.M. :—

(*a*) Continuously, when they are under definite and continuous liability to fly during periods of attachment to the Royal Air Force;
(*b*) On each day when an ascent is made as pilot to carry out practice flights; during periods of general service, payment to be limited to twelve days annually, except as provided in (*c*);
(*c*) If serving at the Admiralty, on each day when an ascent is made as pilot to carry out a practice flight without limit to the number of days on which such flying is carried out.

FLEET AIR ARM BADGE.—The King's approval has been given for alterations in the position in which the badge for officers serving in the Fleet Air Arm is to be worn with white uniform. If no medal ribbons are worn the badge is to be placed 1½ in. above the left breast pocket. If medal ribbons are worn it is to be placed immediately above the top row.

CHINA STATION.—H.M.S. "Eagle" Captain L. V. Wells D.S.O. arrived at Hong Kong on 11th June to take up duty as aircraft carrier on the China Station in place of the "Hermes" Captain W. B. Mackenzie. The latter left on 12th June and arrived at Chatham on 24th July.

ROYAL MARINES

NEW ADJUTANT-GENERAL.—Major-General R. F. C. Foster C.B. C.M.G. D.S.O. R.M. has been appointed to succeed General Sir Richard V. T. Ford K.C.B. C.B.E., as Adjutant-General, Royal Marines, to date 2nd October, 1933. Sir Richard Ford completes three years in the post on 1st October. His successor, now 57, entered the Royal Marine Artillery in 1897, and is the son of the late Montagu Foster of Stubbington House, Fareham. During the War period he was A.A. and Q.M.G. of the R.N. Division; A.Q.M.G., X. Army Corps, and A.Q.M.G., British Army of the Rhine.

FOREIGN NAVIES

ARGENTINE

REORGANIZATION OF THE FLEET.—The fleet has been reorganized and is now divided up under the following headings:—

(1) Battle Squadron;
(2) Special Service Squadron;
(3) Auxiliary Service Ships;
(4) Inactive Ships;
(5) Naval Air Arm.

Battle Squadron:

Battleships	"Moreno" (flag) and "Rivadavia."
Cruisers	"25 de Mayo" and "Almirante Brown."
1st Destroyer Flotilla ..	"La Rioja," "Tucuman," "Mendoza," "Cervantes" and "Garay."
2nd Destroyer Flotilla ..	"Cordoba," "La Plata," "Catamarca" and "Jujuy."
Submarines	"Santa Fé," "Salta" and "Santiago del Estero." Mother ship:—"Chaco."

Special Service Squadron :	
Gunboats	" Rosario " and " Parana."
1st Minesweeping Flotilla ..	" M.4," " M.5," and " M.6."
2nd Minesweeping Flotilla ..	" M.7," " M.8," and " M.9."
Auxiliary Service Ships :	
Training Ship	" Presidente Sarmiento."
Tanker	" Ministro Ezcurra."
Tugs	" Azopardo " and " Mataco."
Despatch Vessels	" Golondrina " (Minister of Marine), one surveying ship.
Buoys and Light Vessels ..	" Alferez Mackinlay."
Inactive Ships :	
Guardships	" Belgrano " and " Pueyrredon."
	" San Martin " and " Garibaldi."
Gunboats	" Libertad " and " Independencia."
Transports	" Bahia Blanca," " America," and " Vicente."
	" Fidel Lopez."
Surveying ship	One.

BRAZIL

NAVAL ACTIVITIES.—There are indications that Brazil is becoming alive to the fact that her navy is obsolete and is far from being efficient. The Minister of Marine in his Annual Statement, alludes to the fact that the fleet is " overcome by age, lacking in sea service, idling in port " and " is losing the habit of the sea and becoming a bureaucratic parasite." He is anxious to substitute for the old battleships " Minas Geraes " and " Sao Paulo " at least two modern cruisers ; in addition he stated that the Staff had come to the conclusion that it was urgently necessary to undertake a programme of construction which would include nine destroyers, six submarines, six minesweepers, three tankers and certain auxiliaries, involving a total estimated cost of £8,122,000, which it is suggested should be spread over twelve years.

More recently three important steps have been taken by the Government in conformity with these recommendations : (1) a sum of approximately £800,000 has been decreed for twelve years for new construction ; (2) a contract has been placed with Messrs. Armstrong Whitworth for the purchase of a new training ship ; (3) a scheme for the earlier retirement of older officers and earlier promotion for young officers has been approved.

BATTLESHIP RECONDITIONING.—It was announced on 17th June that the contract for the re-boilering of the battleship " Minas Geraes " had been placed, in the face of international competition, with Messrs. John I. Thornycroft and Co., Ltd., for their latest type of oil-burning water-tube boilers. The " Minas Geraes " was built at the Armstrong yard, Elswick, and completed in 1909.

CHINA

MUTINOUS WARSHIPS.—Early in July, six vessels were reported to have deserted from the Tsingtao headquarters of the Chinese North-Eastern Squadron. Two cruisers, the " Haichi " and " Haishen," and the training ship " Chaoho," deserted about 27th June, and three gunboats about 9th July. The first three reached Canton, where the officers were welcomed by the leaders of the South-West Provincial Council, who at the same time were chary of accepting their services

for fear of offending the authorities at Nanking. Meantime, three other warships, the cruisers "Yatsen," "Haiyung" and "Haichau," arrived from the North, and anchored in Castle Peak Bay, in Hong Kong waters, presumably in pursuit of the original mutinous trio.

DENMARK

SAILING TRAINING SHIP.—The new training ship "Danmark," recently handed over by the Nakskov Dockyard, is a three-masted full-rigged ship, steel built. The auxiliary propelling machinery consists of a Diesel motor of 250 h.p. She has accommodation for 120 boys.

FRANCE

THE "DUNKERQUE."—In an address to the *Cercle Républicain* on 11th July, M. Leygues, Minister of Marine, said that the French Navy of to-day might consider itself the equal of any in the world. In torpedo craft, submarines, light cruisers and battle cruisers[1] France now had ships equal if not superior to those of Great Britain, the United States or Japan. Furthermore, they would soon have the "Dunkerque," of 26,500 tons, which other nations agreed in considering the most powerful of capital ships. Her speed of 33 knots and her armament would certainly make her the "queen of the seas."

According to previously published figures, the "Dunkerque" will be armed with eight 13-in. guns in two quadruple turrets, and eight 6.1-in. guns, and her speed was given as 29–30 knots.

NEW CONSTRUCTION.—The netlayer "Gladiateur" has been launched at Lorient. She has a displacement of 2,330 tons, and is designed for a maximum speed of 20 knots. She is due to complete her trials in 1934.

The river gunboat "Tourane" has been launched at Saigon, and the "Mytho," another craft of the same type, is due to follow her shortly. They are vessels of 100 tons, propelled by two Diesel motors of 125 h.p., giving them a radius of 560 miles at 10 knots. They carry an armament of one 75 mm. and two 37 mm. guns, one mortar and two machine guns. Their complement is two officers and twenty-eight men.

WORLD TRAINING CRUISE.—The following particulars concerning the cadet training cruiser "Jeanne d'Arc," completed in 1931, and which has made a cruise round the world with some 160 cadets and instructors on board, are given by the Paris Correspondent of the *Naval and Military Record*:—"Official reports are extremely satisfactory. All-round robustness, good nautical aptitudes, reliable sea speed, satisfactory working of the turrets and other parts of the armament installations, together with exceptional conditions of comfort, sum up the qualities of the ship, which is an improved copy of the 'Duguay-Trouin' type. As a show-the-flag cruiser her smart, imposing appearance, her reception halls (worthy of a passenger liner), which are her special features, have made her a conspicuous, unprecedented success."

GERMANY

NAVAL ACTIVITY.—Germany is proceeding steadily with her programme for modernising her navy, and replacing ships within the terms of the Versailles

[1] Possibly he meant 10,000-ton cruisers; France has no battle cruisers.—EDITOR.

Treaty. Four armoured ships of the "Deutschland" class are now complete, completing or projected. The "Deutschland" is in commission, the "Admiral Scheer" completing, the "Ersatz Braunschweig" was ordered in October, 1932, and the "Ersatz Elsass" will be ordered in the Autumn of 1934. In addition there are four reserve destroyers due to complete during the years 1934–36.

Training Ship.—The "Ersatz Niobe," which is to replace the old sailing training ship of that name, has been launched at Hamburg and given the name "Gorch Fock." She is due to be put into service at the beginning of July. Gorch Fock was the name of a German poet sailor who fell in the battle of Jutland.

Training Cruise.—The cruiser "Köln" has been making an extensive foreign cruise to the Far East and the Pacific. Captain Schniewind, in command, was received in audience by the King of Egypt when the ship was at Alexandria. At Sydney on 12th May, 275 officers and men who served for Australia in the War had luncheon with officers and men of the "Köln." Major-General Sir Charles Rosenthal said he was proud to extend the hand of friendship to former enemies, and Captain Schniewind said that the Australian attitude made him confident of the future of the world.

Jutland Commemoration.—The anniversary of the battle of Jutland on 31st May was commemorated in Germany with rather more pomp and circumstance than in previous years. A naval detachment from Kiel marched through Berlin streets, and naval guards relieved the military at the war memorial in Unter den Linden and at the Presidential palace. Kemper Square in Berlin has been renamed Skagerak Square (the German name for the battle), with the consent of Admiral Levetzow, Police President of Berlin, who commanded the battle cruiser "Moltke" in the action.

GREECE

Training Cruise.—The Greek training ship "Ares," with eighty midshipmen, arrived at Constantinople on 12th July, and was cordially received by the Turkish authorities. This was the first official friendly visit of a Greek warship to a Turkish port since the War.

ITALY

Naval Manœuvres.—Signor Mussolini again watched the naval manœuvres of 1933 from his yacht "Aurora." The exercises took place in July within the triangle Naples–Sicily–Sardinia, and one of their objectives was to test the defences of the Strait of Messina between Sicily and the mainland. The Premier embarked at Gaeta on 4th July. Among the exercises he witnessed were the bombardment of a supposed hostile submarine, gunnery practice by destroyers and flotilla leaders, and a torpedo attack by a flotilla upon a flotilla leader.

JAPAN

Movement for Parity.—On 3rd May, the Tokio Correspondent of *The Times* reported a statement by the spokesman of the Japanese Foreign Office that Japan at the next Naval Conference in 1935 would demand parity in principle with Great Britain and the United States. The spokesman pointed out that Germany, though defeated in the War, now demanded equality of armaments, and said that equality in a matter so vital and so intimately connected with national prestige was the

only basis which the nations of to-day could be expected to accept. This pronouncement is not to be read, it is stated, as a refusal to reduce naval armaments. Japanese policy in that respect depends entirely on the policy of other Powers.

NEW PROGRAMME.—Details of a programme of new ships to the limit laid down by the London Treaty, received from its Correspondent at Tokio, were published in *The Daily Telegraph* on 12th July. The ships number 33, involving an expenditure of £31,000,000, and would be constructed over a period of three years. They include :—

2 8,500 ton cruisers ;
2 10,000-ton aircraft-carriers (to replace the " Hosho ") ;
1 5,000-ton minelayer ;
6 submarines, totalling 7,500 tons ;
14 1,400-ton destroyers;
8 torpedo boats ; and
8 flying-boat units (at an additional cost of £9,000,000).

This programme now awaits the sanction of the Navy Minister and later of the Finance Minister. It may undergo minor changes.

PORT ARTHUR.—Port Arthur has been formally constituted a minor Naval Station. Rear-Admiral Tsuda, who previously commanded the Second Foreign Service Squadron, has been appointed to command the base. The ships of that Squadron will, in future, be included in the Port Arthur Command. One of the principal objects of this base is to afford repair facilities for vessels employed in Manchurian waters.

POLAND

NAVAL ESTIMATES.—The Estimates for 1933–34 amount to a net total of approximately £590,000, which is a small increase as compared with the previous year. Detailed statements show that the sum assigned for the construction of floating units is nearly doubled, while there has been a very large saving on that included in the 1932–33 Estimates for building, port installations and repairs.

STRENGTH OF THE FLEET.—The Polish fleet now consists of two destroyers, three submarines, five torpedo boats, two gunboats, one survey vessel and three training ships. In addition there is the Pinsk River Flotilla of six river monitors, eight river scouts, one transport and twenty motor boats.

PORTUGAL

NEW SLOOPS.—On 25th May, the keels of the sloops " Alfonso d'Albuquerque " and " Bartolomeu Dias " were laid at the yard of Messrs. Hawthorn, Leslie and Co., Hebburn-on-Tyne. These will be vessels of 2,000 tons, and with two sets of single reduction turbines with water-tube boilers will have a designed speed of 21 knots. The armament will consist of four 4.7-in. guns, two 3-in. H.A. guns ; four 2-pdr. pom-poms ; and two fire control systems will be fitted, one for the 4.7 and the other for the 3-in. armament. The vessels will also be equipped for minelaying and will have accommodation for 40 mines. They will each have two depth-charge throwers and also protective paravanes.

The first sloop of the programme, called the " Gonçalo Velho," has already been completed and delivered. The entire order for these ships has been entrusted to British firms.

DESTROYER COMPLETED.—In June, the Finance Ministry transferred to the Ministry of Marine sufficient funds to pay off the cost of the destroyer "Vouga," which has been built by Yarrow and Co., Ltd., and was launched on 25th January, 1933. During July, the "Vouga" visited Portland. By paying promptly, the Portuguese Government saved over £10,000, the difference in price between a cash settlement and payment by instalments.

SPAIN

FATAL ACCIDENT.—An explosion occurred in one of the boilers of the cruiser "Mendez Nunez" during manœuvres off Cadiz on 18th July, a stoker being killed and five others injured. A fire which broke out was extinguished a few hours later. The "Mendez Nunez," of 4,500 tons, armed with six 6-in. guns, was completed at Ferrol in 1924.

SWEDEN

NEW CONSTRUCTION.—The vedette ship "Kaparen" was launched in the early summer. She is the second of four ships of this type to be built during the first five years of the fleet replacement plan. The first of the series is the "Jagaren," launched in December, 1932. The other two will be called "Snappahamen" and "Vaktaren." They displace 250 tons and have a maximum speed of 24 knots.

TRAINING CRUISE.—The cruiser "Fylgia," in the course of one of her cruises as a training ship, visited Dover from June 12 to 18.

NAVAL AIR SERVICE.—Orders have been placed with Messrs. Hawker for two Osprey two-seater fighters with Pegasus air-cooled engines. The aircraft will be built in England and the engines manufactured in Sweden under license.

UNITED STATES

TENDERS FOR NEW SHIPS.—The Navy Department announced on 19th June that it was open to receive tenders up to 26th July for the construction of seventeen vessels of war to be built in private yards. They included two aircraft carriers, one heavy cruiser, one light cruiser, eleven torpedo-boat destroyers and two submarines. The heavy cruiser was authorized by the Act of 13th February, 1929. The other ships were authorised by the National Industrial Recovery Act.

CONSTRUCTION PROGRAMME.—The following naval construction programme was announced on 23rd May by the Secretary of the Navy as part of the Administration's public works programme :—

20 destroyers ; 16 of 1,500 tons, and 4 of 1,800 tons.
2 aircraft carriers of 10,000 tons.
4 cruisers of 10,000 tons.
4 submarines of 1,150 tons.
2 gunboats of 2,000 tons.

In an address which was broadcast, Mr. C. A. Swanson, Secretary of the Navy, made the following points in reference to the new programme :—

"The need for an adequate navy is more urgent now than in the past, owing to unsettled and chaotic conditions in the world.

We are no longer an isolated nation. Having become a world Power, we must accept and perform its work and responsibility.

No form of construction, private or governmental, is more directly beneficial to labour than naval construction. More than 85 per cent. of the funds so spent is paid to the workers employed.

The United States is far below the ratio permitted it under the Treaty (of London). In some categories the lack of a building programme has resulted in almost complete extinction of under-age ships.

MODERNIZATION PROGRAMME.—On 5th July it was announced from Washington that the Navy was to ask for 77,000,000 dollars from the Public Works Fund for the modernization of battleships. The five battleships which have yet to be done are the "California," "Tennessee," "West Virginia," "Colorado" and "Maryland." In addition it is proposed to give increased gun elevation to the "New York" and "Texas," which have already been modernized.

NEW ECONOMIES.—One of the earliest acts of Mr. Roosevelt on taking up the office of President was to reduce by 15 per cent. the pay of officers and men of the navy and marines. In the case of the officers this replaces the vexatious and complicated "leave without pay" ordinance, and has been received without great dissatisfaction by them. The men appear to have met the reductions loyally and without much protest.

Other economies designed to reduce the naval appropriations for 1933–34 by $53,000,000 include:—(1) the closing of superfluous Navy Yards at Portsmouth, Boston, Philadelphia and Charleston; (2) the reduction of enlisted personnel and the probable introduction of a scheme for half-pay compulsory retirement and reduction of pensions for officers; (3) reduction of certain shore establishments; (4) reduction of fuel and allowance of practice ammunition. Combined manœuvres are to be abandoned; (5) other economies, such as the amalgamation of marine stations, reduction of civil staffs, and naval prisons, are under consideration.

The general policy seems to be to cut down the pay of personnel and cost of administration and maintenance of the navy, while giving employment by proceeding with a large building programme. It would appear that the problem of manning the new ships is likely to become acute in future years.

CHIEF OF NAVAL OPERATIONS.—Admiral W. V. Pratt relinquished the post of Chief of Naval Operations on 30th June, and was placed on the retired list next day. He reached the age limit of 64 years on 28th February, but was retained in office at the request of President Roosevelt. His successor is Admiral W. H. Standley.

ARMY NOTES

HOME

Appointments and Promotions.

H.M. the King has approved the following appointments :—Colonel H. C. L. Howard, C.M.G., D.S.O., to be Aide-de-Camp to the King, in succession to Colonel A. J. McCulloch, D.S.O., D.C.M., promoted ; Colonel Commandant (temporary Brigadier) G. Mathew, C.B., to be Royal Marine Aide-de-Camp to the King, in succession to Colonel Commandant (temporary Brigadier) G. R. S. Hickson, promoted ; Lieutenant-Colonel A. G. L'E. Le Gallais, M.C., The Royal Militia of the Island of Jersey, to be Aide-de-Camp to the King (with promotion to the rank of Colonel), in succession to Honorary Colonel F. H. Voisin, The Royal Militia of the Island of Jersey Reserve ; Lieutenant-Colonel (Honorary Colonel) H. M. P. Hewett, Calcutta Light Horse, Auxiliary Force, India, Honorary Aide-de-Camp to the Viceroy of India, to be Aide-de-Camp to the King (Additional), in succession to Lieutenant-Colonel (Honorary Colonel) R. R. Will, C.I.E., D.S.O., V.D., The Bengal Artillery, Auxiliary Force, India, resigned.

Lieutenant-Colonel H. M. J. Perry, O.B.E., Royal Army Medical Corps, to be Honorary Surgeon to the King (with promotion to the rank of Brevet Colonel), in succession to Major-General H. Ensor, C.B., C.M.G., C.B.E., D.S.O., M.B., late Royal Army Medical Corps, retired ; Major-General C. A. Sprawson, C.I.E., M.D., F.R.C.P., I.M.S., Honorary Surgeon to the Viceroy of India, to be Honorary Physician to the King, in succession to Colonel W. H. Leonard, F.R.C.S., I.M.S., retired.

Major-General H. J. Huddleston, C.B., C.M.G., D.S.O., M.C., to be Colonel of The Dorsetshire Regiment, in succession to Major-General Sir Arlington A. Chichester, K.C.M.G., C.B., D.S.O.

The following appointments have been announced from the War Office :—General Sir Cyril J. Deverell, K.C.B., K.B.E., General Officer Commanding-in-Chief, Western Command, has been appointed General Officer Commanding-in-Chief, Eastern Command, in succession to the late General Sir Webb Gillman ; Lieutenant-General W. M. St. G. Kirke, C.B., C.M.G., D.S.O., has been appointed General Officer Commanding-in-Chief, Western Command, in succession to General Sir Cyril Deverell.

Lieutenant-General the Honourable Sir J. Francis Gathorne-Hardy, K.C.B., C.M.G., D.S.O., to be General Officer Commanding-in-Chief, Aldershot Command, with effect from 12th October, in succession to General Sir Charles Harington, G.C.B., G.B.E., D.S.O., D.C.L., who will then become Governor and Commander-in-Chief, Gibraltar ; Lieutenant-General Sir Alexander E. Wardrop, K.C.B., C.M.G., to succeed Lieutenant-General Sir J. Francis Gathorne-Hardy, General Officer Commanding-in-Chief, Northern Command, York, with effect from 12th October next.

Lieutenant-General W. H. Bartholomew, C.B., C.M.G., D.S.O., to continue in the appointment of Director of Military Operations and Intelligence, the War

Office, until the end of the present year; Major-General J. G. Dill, C.B., C.M.G., D.S.O., to be Director of Military Operations and Intelligence at the War Office, with effect from 22nd January next, in succession to Lieutenant-General W. H. Bartholomew; Major-General C. C. Armitage, C.B., C.M.G., D.S.O., to be Commandant, The Staff College, Camberley, in succession to Major-General J. G. Dill.

Lieutenant-General Sir W. Edmund Ironside, K.C.B., C.M.G., D.S.O., Colonel Commandant, Royal Artillery, Lieutenant of the Tower of London, to be Quarter-Master-General of the Army in India, in succession to Lieutenant-General Sir Alexander Wardrop, appointed General Officer Commanding-in-Chief, Northern Command, with effect from 12th October next; Lieutenant-General H. H. S. Knox, C.B., D.S.O., to be Lieutenant of the Tower of London, in succession to Lieutenant-General Sir W. Edmund Ironside.

Lieutenant-General C. Bonham-Carter, C.B., C.M.G., D.S.O., Commander, 4th Division, to be Director-General of the Territorial Army, with effect from 1st October next, in succession to General Sir William Thwaites, K.C.B., K.C.M.G., Colonel Commandant, Royal Artillery, Aide-de-Camp General to the King; Major-General J. E. S. Brind, C.B., C.M.G., D.S.O., to be Commander of the 4th Division, in succession to Lieutenant-General C. Bonham-Carter.

Major-General E. O. Lewin, C.B., C.M.G., D.S.O., to be General Officer Commanding, Malaya Command, with effect from 3rd February next, in succession to Major-General L. C. L. Oldfield, C.B., C.M.G., D.S.O.

Colonel R. H. Haining, D.S.O., to be Deputy-Director of Military Operations and Intelligence, the War Office, with the rank of Brigadier, in succession to Brigadier A. C. Temperley, C.B., C.M.G., D.S.O., who will continue to be the British Military Representative on the Permanent Advisory Committee to the League of Nations.

Colonel A. J. Ellis, D.S.O., to be Commander of the Tientsin Area, China.

Colonel W. G. Lindsell, D.S.O., O.B.E., M.C., to be Commandant of the Senior Officers' School, Sheerness, in succession to Colonel A. J. McCulloch, D.S.O., D.C.M., promoted.

The following promotions have been made:—

Lieutenant-General Sir Cyril J. Deverell, K.C.B., K.B.E., to be General.

Major-General C. Bonham-Carter, C.B., C.M.G., D.S.O., to be Lieutenant-General.

Colonel FitzG. G. Fitzgerald, D.S.O. (R.A.M.C.); Colonel H. J. Huddleston, C.B., C.M.G., D.S.O., M.C.; Colonel L. I. G. Morgan-Owen, C.M.G., C.B.E., D.S.O.; Colonel A. J. McCulloch, D.S.O., D.C.M., A.D.C.; to be Major-Generals.

Organization and Nomenclature.

(1) Armoured Car Companies, Royal Tank Corps, in India. Each of the Armoured Car Companies of the Royal Tank Corps serving in India is to be re-equipped with light tanks. As and when each company is so re-equipped, it is to be re-designated "Light Tank Company, Royal Tank Corps," the new designation being preceded by the numeral at present borne by the unit. In consequence, it is notified that the 2nd and 7th Armoured Car Companies, Royal Tank Corps, will be re-designated respectively the 2nd and 7th Light Tank Companies, Royal Tank Corps.

(2) The 3rd and 5th Armoured Car Companies, Royal Tank Corps, now reconstituted as a single unit, are to be designated the "6th Battalion, Royal Tank Corps."

(3) The formation of the 9th Anti-Aircraft Battery, Royal Artillery, at Hong Kong, and of the 10th Anti-Aircraft Battery, Royal Artillery, at Malta, has been ordered.

(4) The absorption of the 30th (Fortress) Company, Royal Engineers, into the 4th (Fortress) Company, Royal Engineers, has been carried out.

Uniform and Medals.

(1) To commemorate the 300th anniversary of the raising of The Royal Scots (The Royal Regiment), H.M. the King has approved of the Royal Stuart tartan being worn in future by the pipers of that regiment.

(2) H.M. the King has commanded that the "India General Service Medal, 1908," shall be granted to the forces in the operations on the North-West Frontier of India during 1930–31 and in Burma during 1930–32; (*a*) with clasp "North-West Frontier 1930–31," to all who served:—

(*a*) In the military districts of Peshawar (excluding Chitral Agency), Kohat and Waziristan between 23rd April, 1930, and 30th September, 1930, both dates inclusive.

(*b*) Between 1st October, 1930, and 22nd March, 1931, both dates inclusive, within the following boundaries:—

North.—All exclusive, Bazar River–Khyber River to bridge on Peshawar–Jamrud road, 7½ miles from Peshawar.

East.—All inclusive, the Frontier road from the above-mentioned bridge to Narai Khwar Post; thence Frontier road to Bara Fort–Matanni–Aimal Chabutra.

South and West.—A line from and including Aimal Chabutra to Point 2498 (5 miles N.W. Kohat); thence Administrative Border to Afghan Frontier.

(3) With clasp "Burma, 1930–32," to officers and men:—

(*a*) Who were despatched from India and actually served in Burma in connection with the rebellion, between 22nd December, 1930, and 25th March, 1932, both dates inclusive.

(*b*) Not included in (*a*), who served in Burma between 22nd December, 1930, and 25th March, 1932, both dates inclusive, within the boundaries of the following civil districts:—

Shwebo.	Bassein.	Toungoo.
Meiktila.	Sagaing.	Myaungmya.
Tharrawaddy.	Pegu.	Pakokku.
Lower Chindwin.	Prome.	Insein.
Minbu.	Kyaukse.	Pyapon.
Hanthawaddy.	Thayetmyo.	Myingyan.
Mandalay.	Maubin.	Henzada.
Magwe.	Yamethin.	

Individuals already in possession of the India General Service Medal, 1908, will receive clasps only.

TERRITORIAL ARMY

The Royal Review.—Owing to inclement weather, the Royal Review of the London Divisions of the Territorial Army, which was ordered to take place in Hyde Park, had to be cancelled.

Terms of Service.—For many years it has been the rule that men serving in the Territorial Army should be enlisted under a pledge that in the event of their

being despatched outside the United Kingdom they would serve with their units. The Army Council realise that the literal fulfilment of this pledge would be a matter of extreme difficulty in any major war and must seriously limit the usefulness of the Territorial soldier. The Territorial Army Associations have now agreed that as from 1st November, 1933, this pledge shall be cancelled for any future recruits. This decision will in no way affect the conditions of service of men serving on 31st October, nor will it affect men serving on that date who subsequently re-engage. Accordingly, with the assent of Associations the Territorial Army Regulations will be amended to the effect that in the event of grave national emergency legislation may be introduced rendering all men then serving, or subsequently enlisting in the Territorial Army, liable, after its embodiment, for general service—that is service in any unit of the Regular Forces or the Territorial Army—except those who have served continuously since 31st October, 1933, inclusive. It will be recorded, however, in the Regulations that every endeavour will be made to retain the men affected by such legislation in the corps to which they are first appointed, but military emergency must be the deciding factor. All men serving in the Territorial Army before its embodiment, if required to proceed outside the United Kingdom, will do so with their own units, except men selected for appointment to commissions, or for duty with training cadres, or with their own second line units. Territorial units will not be used for the purpose of supplying drafts to the Regular Army.

MILITARY STUDIES AT THE LONDON UNIVERSITY.

The first Course for the Academic Diploma in Military Studies, recently instituted by the University of London, has just been concluded. The University has thus taken the lead in providing a valuable opportunity for officers of the Territorial Army and of the Officers Training Corps for the study of the higher branches of military art at a moderate cost to the individual officer. The value of the Course to the British Army generally, has, furthermore, been fully recognised by the General Staff of the War Office who have given to it the greatest possible assistance.

Though the primary object of the Course is to train officers of the Territorial Army and of the Officers Training Corps to be qualified to fill the more junior staff appointments in the Army in the event of general mobilization, the Course, in addition, offers a general military education which should be of considerable value to the more senior regimental officers of these units—particularly in regard to their duties and responsibilities of training their own officers for promotion examinations, etc. The Course is carried out under the direction of Major-General Sir F. Maurice, Professor of Military Studies, assisted by Brigadier-General E. B. Mathew-Lannowe, while numerous lectures on specialist subjects are given throughout the Course by selected officers of the Royal Navy and the Army.

The Course is of two years' duration—the lectures and other indoor instruction being held at King's College, Strand, on two evenings per week during each University term; the actual days and hours being fixed to suit students as far as possible. The syllabus includes a visit to the battlefields of the Great War in France and also visits to Army Schools of Instruction, demonstrations, etc.

The next Course commences early in October.

All particulars can be obtained on application to:—The Academic Registrar, University of London, South Kensington, London, S.W.7.

DOMINION FORCES

REGIMENTAL ALLIANCES.—H.M. the King has approved of the following alliances:—

The North Auckland Mounted Rifles, New Zealand Military Forces, to The Royal Scots Greys (2nd Dragoons).

The Lake Superior Regiment, Non-Permanent Active Militia of Canada, to The Northamptonshire Regiment.

UNION OF SOUTH AFRICA

APPOINTMENTS.—Major-General A. J. E. Brink, D.T.D., D.S.O., S.A. Staff Corps (P.F.), has relinquished the appointment of Chief of the General Staff but retains the appointment of Secretary for Defence and, in addition, is appointed to the command of the Union Defence Forces and Cadets with the designation Secretary for Defence and General Officer Commanding, Union Defence Forces.

Brigadier-General Sir Pierre van Ryneveld, K.B.E., D.S.O., M.C., S.A. Staff Corps (P.F.), has relinquished the appointments of Director of Air Services and O.C. Troops, Roberts Heights, and has been appointed Chief of the General Staff.

INDIAN ARMY

APPOINTMENTS AND PROMOTIONS.

Major-General H. W. Newcome, C.B., C.M.G., D.S.O., to be Major-General, Royal Artillery, Headquarters, Army in India; Major-General H. Karslake, C.B., C.M.G., D.S.O., to be Commander, Baluchistan District, in succession to Major-General H. W. Newcome.

Major-General C. A. Sprawson, C.I.E., M.D., F.R.C.P., I.M.S., V.H.S., Surgeon-General to the Government of Madras, to be Director-General, I.M.S., in succession to Major-General Sir John Megaw, K.C.I.E., M.B., I.M.S., K.H.P., appointed Medical Adviser, India Office.

Major-General H. E. Herdon, C.B., C.I.E., I.A. (ret.), to be Colonel, 1st Battalion (Coke's) 13th Frontier Force Rifles, in succession to Major-General W. du G. Gray, C.B.

FOREIGN

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FRANCE

INFANTRY REORGANIZATION AT HOME.—The reorganization of the infantry divisions stationed near frontier fortifications have been published.

There will be two fortified area commands (*Régions Fortifiées*), *i.e.*:—

(i) Metz.
(ii) The Lauter.

In addition there will be three Rhine fortified sectors (*Secteurs Fortifiés du Rhin*) The fortified area commanders will have under their command all the infantry, artillery and engineer units detailed for the permanent occupation and defence of the fortified works in their respective areas.

The infantry units which are to form part of the permanent garrisons of these fortified areas are to be taken from the four divisions (11th, 12th, 42nd and 43rd) at present stationed in the 6th and 20th regions, and will consist of the four infantry regiments (23rd, 146th, 153rd and 168th) which are to be transformed into regiments of the *Type Région Fortifiée*, and one regiment (170th) of those

which are to be transformed into *Type Mixte* regiments.[1] This reorganization involves practically no movement of troops.

As a consequence of the above measures, the four infantry divisions concerned will be reduced to two infantry regiments each, instead of the normal three, which they all have at present, except the 43rd Division, which has four regiments. In other words, the 11th, 12th and 42nd Divisions are to be reduced from nine battalions to six battalions each, and the 43rd Division from twelve battalions to seven battalions; for it should be noted that the 43rd Division is to include one *Type Mixte* regiment, the 158th of four battalions.

It is announced that the groups of fortified area horse-drawn artillery will be organized into one regiment consisting of eight batteries of light and four batteries of heavy guns, and one group consisting of four batteries of light and two batteries of heavy guns. It is also stated that the five regiments of foot artillery are to have increased establishments and will consist of a varying number of batteries—seven to twelve. These five regiments are to be mechanized.

Foreign Legion (Infantry Units).—New establishments for the infantry units of the Foreign Legion have been published. The main features are :—

(i) The 5th Regiment (stationed in Indo-China) will have three instead of four battalions).
(ii) The establishment of each infantry regiment of the Foreign Legion will be 80 officers, 2,924 other ranks, an increase of 2 officers and 34 other ranks.
(iii) The establishment of the French *cadre* is 100 per regiment.
(iv) A depot is formed for the five regiments, the establishment of which will be 50 officers and 4,246 other ranks.
(v) Motor companies will take the place of mounted companies, except in the case of certain regiments as decided by the War Minister.

Colonial Troops.—Certain changes are contemplated.

(i) *Indo-China.*—The autonomous Tong Brigade will be transformed into a division. A battalion will (as noted above), be withdrawn from the 5th Regiment of the Foreign Legion.
(ii) *West Indies.*—A machine-gun company and a battalion headquarters are to be created at Martinique. The reasons being :—
  (*a*) To enable the natives to receive their military training under the recruiting law (although for reasons of economy they will only receive 6 months' training instead of the usual 12 months).
  (*b*) To make a start with the organization of the naval station at Fort-de-France, which has not been in use since 1924 when it was sold.
(iii) *Pacific.*—The detachment at Tahiti is to become a company.
(iv) *French Somaliland.*—The creation of a company of *tirailleurs indigénes* at Djibouti, which port of call has hitherto possessed no military defensive organization. The Colonial Department considers that a military organization should be given to this base which forms an important strategical link.

The native police forces in French Somaliland are to be reorganized into a native militia, which, however, in peace remains a police organization under the civil authorities. The organization and establishment of this militia will be as follows :—

[1] See Army Notes, R.U.S.I. Journal for February, 1933, p. 198.

Commander : A captain of Colonial infantry.
A foot " brigade " :
Europeans—1 subaltern officer ; 5 warrant officers and non-commissioned officers.
Natives—180 other ranks.
A camel troop :
Europeans—2 warrant officers and non-commissioned officers.
Natives—50 other ranks.
On mobilization the militia will be placed entirely at the disposal of the military authorities. The mobilization of the militia will be authorized by the Governor after consultation with the O.C. Troops.

PACIFICATION OF INDO-CHINA.—A statement on the work of peaceful penetration which has been carried out in the central plateau of South Indo-China has been published.[1]

In December, 1931, the Governor-General, acting on military advice, drew up a plan for the occupation of the central plateau on the borders of Cambodia, Cochin-China and Annam. The task was entrusted to two companies. The first company of Annamite Mountain Light Infantry set out from Ban-Me-Thuot in a south-westerly direction and after a difficult advance through almost impenetrable forest made a strong post at Buon Djeng Drom in the heart of the unsubdued area from which the work of pacification and reconnaissance was carried out. By the end of the year over 60 villages, the existence of which had been unknown, submitted to authority.

Meanwhile the second company of Cambodian Light Infantry marching eastwards reached its advance base at Shrektum in February, and there, with the aid of penal labour, made a road through an extremely unhealthy region of dense forest. At the end of six months they had advanced 40 kilometres and reached the Plateau des Herbes. It was decided after a reconnaissance carried out in October to make a permanent base 80 kilometres from Shrektum, which it is hoped the Annamite company will also shortly reach.

The authorities are very well satisfied at the peaceful manner and the short time in which the occupation has been carried out. It will be consolidated by building roads, establishing medical posts and by making local heads of tribes responsible for minor administration.

GERMANY

NATIONAL PHYSICAL TRAINING.—At a Federal Cabinet Meeting on 3rd April it was decided to transfer the control of the scheme for national physical training (*Jugendertüchtigung*) to the Federal Ministry of Labour, which already controls the Voluntary Labour Camps, with which the youth movement is closely connected. Since its inception last year, the movement has been under a National Board of Control, which has proved in practice too unwieldly for its task, and the real organizing work has been done by a small energetic executive committee. This committee has some 12 branch headquarters distributed throughout Germany and East Prussia, through which it controls the 16 to 18 training camps which already exist.

There is already a tendency to devote some of the camps to some special form of *Wehrsport* (Defence Sport). A camp near the Kiel Canal is devoted to nautical training, another near Berlin is to follow suit, while a third is apparently to specialise in mounted *Wehrsport* for the benefit of the various *Reit-und Fahrvereine* (riding and driving clubs).

[1] *The Times* Atlas, plate 60, may be consulted.

By the end of March four complete courses of three weeks' duration had been held, and during April a course was specially held for university students.

Having carefully studied the experience at their disposal, the new chairman and committee do not propose to make any major alteration to their programme. Their object is to provide assistant instructors in *Wehrsport* for the associations and clubs, and they are satisfied that a period of three weeks is just long enough to demonstrate how instruction in *Wehrsport* should be given, provided the candidates are sufficiently adept themselves. There have been very few failures at the passing-out examination at the conclusion of courses to obtain certificates qualifying the holders to act as assistant instructors.

The scope of the examination, which is divided into three parts is as follows :—

1. Physical exercises.
   (*a*) 100 metres (time limit 15 seconds).
   (*b*) Long jump (distance 4 metres).
   (*c*) Club throwing (distance 30 metres).
   (*d*) Putting the shot weighing 16 lb. (distance 9 metres).
   (*e*) 3,000 metres (time limit 14 minutes).
   (*f*) Swimming 300 metres (no time limit).
2. Small calibre rifle shooting.
   Firing 3 practices at 50 metres range over open sights without any aids.
3. Field sport.
   (*a*) Marching 15 miles carrying a pack weighing 27½ lb. in 5½ hours.
   (*b*) Tests of eyesight.
   (*c*) Map reading and compass tests.
   (*d*) Transmitting verbal messages.
   (*e*) Making a written report on a site for a post.
   (*f*) Judging distance.
   (*g*) Describing and appreciating a piece of ground for an advance or withdrawal.
   (*h*) Camouflage.
   (*i*) Use of ground.

The candidate is also judged on his bearing and conduct during the test.

The activities at the camps include *Wehrsport* (defence sport) and *Geländeübungen* (field exercises).

Under the term *Wehrsport* are included :—

   (*a*) Drill and physical training.
   (*b*) Field exercises and pack marches. (Standard pack march of 16 miles carrying over 50 lb. equipment).
   (*c*) Judging distance.
   (*d*) Miniature rifle shooting.
   (*e*) Map reading and compass marches.
   (*f*) Tactical appreciation of ground and the use of glasses.
   (*g*) Sand table instruction in tactics.
   (*h*) Messages and reports.

Under the term " Field Exercises " are included :—

   (*a*) Scouting.
   (*b*) Attack.
   (*c*) Defence.
   (*d*) Withdrawal.
   (*e*) Pursuit.
   (*f*) Surprise and ambuscades.

ITALY

PROGRESS IN MECHANIZATION.—The Minister of War has stated that all heavy and medium artillery batteries in the Army have now been mechanized, and that mechanization had also been applied to certain regiments of field artillery. A cavalry regiment has, as an experimental measure, been equipped with the new *Carri Armati Veloci*, which are light two-man armoured machine-gun carriers.

SPAIN

MILITARY FRONTIER AREAS.—The new boundaries of the military frontier areas have been defined. The frontier zone is divided into four sectors as follows :—

(1) Pyrenees or North Frontier.
(2) Portuguese Frontier.
(3) North Coast.
(4) East and South Coast.

The entire area of the Balearic Islands, the Canary Islands and Spanish possessions in Africa will be regarded as military territory. In these military districts there will be no restrictions in regard to building with the exception of roads, railways and aerodromes, for which proposals must be submitted for the approval of the War Ministry.

YUGOSLAVIA

COMPULSORY PHYSICAL TRAINING.—A new law compelling all young people in Yugoslavia up to the age of 20 to take part in compulsory courses of physical training has been published. Unless specially exempted, every boy and girl in the country must belong to a gymnastic association and attend the courses in physical instruction in the State schools or attend special courses arranged by the municipalities. Anyone who refuses to obey the instructions and to practise regularly the exercises prescribed will be liable to fine or imprisonment. Parents who dissuade or prevent their children from practising physical culture are also liable to severe punishment.

AIR NOTES

ROYAL AIR FORCE

Promotions.

The undermentioned promotions were made with effect from 1st July, 1933 :—

Air Vice-Marshal to be Air Marshal.—R. H. Clark-Hall, C.M.G., D.S.O.

Air Commodores to be Air Vice-Marshals.—R. P. Mills, C.B., M.C., A.F.C. ; W. R. Freeman, C.B., D.S.O., M.C. ; W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C.

Group Captains to be Air Commodores.—R. E. C. Peirse, D.S.O., A.F.C. ; H. R. Nicholl, C.B.E. ; R. H. Verney, O.B.E.

Retirement.

Air Commodore A. D. Warrington-Morris, C.M.G., O.B.E., is placed on the retired list at his own request, 3rd July, 1933.

Appointments.

Air Vice-Marshals.—F. W. Bowhill, C.M.G., D.S.O., as a member of the Air Council (Air Member for Personnel), 31st July, 1933, *vice* Air Chief Marshal Sir E. L. Ellington, K.C.B., C.M.G., C.B.E., A.D.C. ; P. B. Joubert de la Ferté, C.M.G., D.S.O., to be Air Officer Commanding, Fighting Area, January, 1934, *vice* Air Vice-Marshal F. W. Bowhill, C.M.G., D.S.O. ; R. P. Mills, C.B., M.C., A.F.C., to be Air Officer Commanding, Oxford Bombing Area, in October, 1933 ; W. R. Freeman, C.B., D.S.O., M.C., to be Commandant, Royal Air Force Staff College in January, 1934.

Air Commodores.—C. D. Breese, A.F.C., to Headquarters, Inland Area, as Senior Air Staff Officer, 15th March, 1933 ; J. B. Bowen, O.B.E., to Air Ministry, for duty as Head of Signals Branch, to date 3rd July, 1933 ; P. H. L. Playfair, C.B., M.C., to be Air Officer Commanding, Wessex Bombing Area, in September, 1933 ; R. E. C. Peirse, D.S.O., A.F.C., to be Air Officer Commanding, Palestine and Transjordan, as from October, 1933.

Group Captains.—G. R. M. Reid, D.S.O., as Air Attaché, Washington, to date 11th April, 1933 ; The Hon. L. J. E. Twistleton-Wykeham-Fiennes to Royal Air Force Training Base, Leuchars, in command, 15th May, 1933 ; H. L. Reilly, D.S.O., to No. 21 Group Headquarters, West Drayton, in command, 15th June, 1933 ; W. L. Welsh, D.S.C., A.F.C., to be Director of Organization and Staff Duties at the Air Ministry as from October, 1933 ; S. W. Smith, O.B.E., to be Officer Commanding, Royal Air Force, Far East, as from about October, 1933 ; C. F. A. Portal, D.S.O., M.C., to be Officer Commanding, Aden, as from January, 1934.

PERSONNEL.

ZONES FOR PROMOTION.—A recent amendment to "King's Regulations and Air Council Instructions for the R.A.F." states that to be eligible for promotion Squadron Leaders, Wing Commanders, Group Captains and Air Commodores must be within the following zones at the date on which promotion, if made, will take effect.

Squadron Leaders.—Not less than three or more than eight years' seniority as Squadron Leaders.

Wing Commanders.—Not less than three or more than seven years' seniority as Wing Commanders.

Group Captains.—Not less than two or more than four years' seniority as Group Captains.

Air Commodores.—Not less than two or more than four years' seniority as Air Commodores.

Officers who have not entered or who have passed beyond the zone of their rank will not be considered for promotion, although the Air Council reserve to themselves the right to promote an officer who is not within the zone of his rank if, while not within the zone, he renders service which they consider to be of an exceptionally distinguished character.

An Air Ministry Order—No. A/180, dated 6th July, 1933—states, however, that the upper limit of the zone of promotion to Group Captain in the general duties branch will be reduced to six years' seniority as Wing Commander, with effect from the promotions to be made on 1st July, 1934. Wing Commanders of 1927 and January, 1928, seniorities will, therefore, be finally considered for promotion on 1st January, 1934.

ENTRY TO THE R.A.F. STAFF COLLEGE.—An Air Ministry Order—No. A/151, dated 1st June, 1933—states that the Air Council have had under consideration the age limits for entry into the R.A.F. Staff College with a view to increasing the amount of service in staff appointments which an officer can give subsequent to qualifying "p.s.a.", and have decided to reduce the present upper age limit for the qualifying examination to 34 for the examinations held in 1935 and 1936, and to 33 for the examinations held in 1937 and subsequent years. An officer who qualifies at an examination held in 1934 or subsequently will be considered for selection for either of the two courses immediately following that examination but not for the third course following the examination. It has also been decided to abolish for examinations held in 1934 and subsequently the lower limit of rank and to substitute a lower age limit of 28 years.

FOREIGN LANGUAGES.—It has been decided to abolish the voluntary papers in foreign languages for the R.A.F. Staff College qualifying examination as from the date of the 1934 examination and to offer in lieu a bonus of marks to those candidates who have passed an interpretership examination in any one of the languages referred to in para. 403 of "King's Regulations and Air Council Instructions" for the R.A.F.

AIR ATTACHÉ FOR PEKING.—In answer to a question in the House of Commons on 3rd July, the Under-Secretary of State for Foreign Affairs said that the employment of an Air Attaché to His Majesty's Legation at Peking had been decided upon in principle, and steps were being taken to give effect to this.

SHORT-SERVICE OFFICERS AND THE ROYAL ARMY SERVICE CORPS.—An Air Ministry Order—No. A/153, dated 1st June, 1933—states that, by agreement with the Army Council, arrangements have been made for the selection of short-service officers of the general duties branch for appointment to commissions as Second Lieutenants in the Regular Army, Royal Army Service Corps, when about to complete or after completing their period of service on the active list. Appointments will be limited to one annually.

R.A.F. COLLEGE, CRANWELL.—In his report at the passing-out inspection of Flight Cadets in July, the Commandant of the R.A.F. College, Cranwell, reported that the present strength was 121 and that, since the formation of the College 646 Cadets had graduated.

AIRMEN PILOTS.—The Air Council have decided that for airmen selected for training as pilots after 25th May, 1933, the normal period of service as a pilot shall be increased from five years to six years, from the beginning of flying training. At the end of the period of flying service airmen will normally revert to their basic trade, but applications from airman pilots, who have not been selected for re-engagement, to complete the full period of their first engagement as pilots will be considered. Such applications can only be approved if the requirements of the Service permit and such extensions are not probable in the near future.

The selection of airman pilots for training as flying instructors will continue to be made on the completion of three years' service from the date of qualification as pilot.

ATTACHMENTS OF FOREIGN OFFICERS.—Lieutenant James Y. Fu, of the Chinese Military Forces, having completed his attachment to the School of Army Co-operation, returned to the Electrical and Wireless School, Cranwell, on 22nd April, to undergo the long Signals Course.

ORGANIZATION.

The Coast Defence Co-operation Flight moved from Eastchurch to Gosport on 23rd May, and has been renamed "No. 1 Coast Defence Training Flight." It is now under the command of the Air Officer Commanding, Coastal Area, for all purposes.

No. 2 Coast Defence Training Flight formed at Gosport with effect from 1st July.

No. 24 (Communication) Squadron moved from Northolt to Hendon on 10th July, and is administered by Headquarters, No. 1 Air Defence Group, through Station Headquarters, Hendon, with effect from that date. The Home Communication Flight now located at Hendon will be absorbed into No. 24 (C) Squadron.

A detached flight of No. 24 (C) Squadron will remain at Northolt, and this flight will be administered by Headquarters, Fighting Area, through Station Headquarters, Northolt.

No. 24 (C) Squadron at Hendon will be responsible for providing flying facilities for the officers at the Air Ministry and Headquarters, Inland Area. The detached flight will be responsible for providing similar facilities for Headquarters, Air Defence of Great Britain, Headquarters, Fighting Area, and the Royal Air Force Depot.

General.

FAREWELL MESSAGE FROM MARSHAL OF THE ROYAL AIR FORCE, SIR JOHN M. SALMOND :—

"After twenty-one years service in the Royal Flying Corps and the Royal Air Force, the time has come for me to bid farewell to my comrades of all ranks of the Air Service.

In doing so, I wish to express my deep appreciation of the high standard of conduct, discipline and devotion to duty which prevails throughout the Royal Air Force, and which has been in no way impaired in the difficult and uncertain times through which we have had to pass.

22nd May, 1933. (Sgd.) J. M. SALMOND."

"GORDON SHEPHARD" MEMORIAL ESSAY.—The following will be the subject of the above essay for 1933–34 :—

"It has been contended by critics of the Royal Air Force that air control of undeveloped countries is more inhumane than control by older methods. Discuss this contention."

PRIVATELY-OWNED AIRCRAFT FOR DUTY JOURNEYS.—Air Ministry Order—No. A/173, dated 22nd June—sets out the conditions under which officers of the General Duties Branch and airmen pilots owning private aircraft may be given permission to use them on approved duty journeys instead of using other means of transport.

VISIT OF THE EMIR OF KATSINA.—The Emir of Katsina, who recently paid a visit to this country, visited the Royal Air Force Station, North Weald, on 4th May and witnessed a short flying display by aircraft of Nos. 56 and 29 (Fighter) Squadrons. A demonstration of supply dropping by parachute was also given. He was afterwards flown in a Vickers Victoria troop-carrying aircraft to Croydon, where he inspected the Air Port.

Air Exercises.

The annual Air Exercises began at 6 p.m. on 17th July, and continued for the ensuing four days. An article dealing with them will appear in the November JOURNAL.

OVERSEAS COMMANDS

Organization.

Station Headquarters, Ramleh, were formed with effect from 1st April, 1933. These Headquarters administer No. 2 Armoured Car Company, and all units located at Ramleh. It will also supervise, after consultation with the Commanding Officer, No. 6 (B) Squadron, such training of the detachment as can be carried out in Palestine and Transjordan.

The detached flight of No. 6 (B) Squadron, Ismailia, ceased to be attached to No. 2 Armoured Car Company, and was attached to Station Headquarters, Ramleh, with effect from 1st April, 1933.

CAIRO-RHODESIA.—Details of this flight were given in last quarter's JOURNAL. It was completed on 19th June according to schedule. On the return flight one of the aircraft forced landed twenty miles from Juba on 13th June. The pilot was uninjured and the passenger very slightly injured. They were flown to

Khartum in an aircraft of No. 47 (B) Squadron, where a spare aircraft was provided, and the flight proceeded on 17th June to Malakal and completed the cruise without further incident.

Flight of No. 202 (F.B.) Squadron to Adriatic and Aegean Seas.—Five Fairey IIIF. seaplanes of No. 202 (F.B.) Squadron carried out a cruise to the Adriatic and Aegean seas between 13th and 23rd June. Starting from Malta, the flight proceeded via Augusta (Sicily), Corfu, Cattaro (Yugo-Slavia), Split (Yugo-Slavia) and back to Corfu, thence to Athens, Mirabella and Mitylene, and back to Malta via Athens, Corfu and Augusta.

No. 209 (F.B.) Squadron.—An Iris V flying boat of No. 209 (F.B.) Squadron flew from Mount Batten to Malta in June. This flying boat is the first aircraft of this Squadron to proceed to Malta.

The remainder of the Squadron, which will be equipped with Iris VI boats, will proceed later to replace No. 202 (F.B.) Squadron, which has been stationed at Calafrana for many years. No. 202 Squadron, which has Fairey IIIF. seaplanes at present, will eventually be re-equipped with flying boats after their return home.

On 6th July the Iris V left Malta on a Mediterranean cruise to Lake Timseh, via Sollum and Alexandria. A flight to the Western Mediterranean is contemplated in the middle of August.

INDIA

Inter-Command Flights.

Course of Instruction, Staff College, Quetta.—Squadron Leader H. P. Lloyd, M.C., D.F.C., has completed the course at the Staff College, Quetta, which terminated on 2nd January, 1933.

Indian Cadets at Cranwell.—During the current year, three Indian Cadets have qualified at the R.A.F. College, Cranwell.

DOMINIONS AND COLONIES

CANADA

The training and Service flying, the civil government air operations, and the technical branches of the Royal Canadian Air Force are now consolidated under one directorate for administrative purposes. The head of the new directorate is Group Captain J. L. Gordon, D.F.C.

The Saskatchewan Government has had five Canadian Vickers' Vedette flying boats transferred to it by the Federal Government to be used purely for provincial government work.

KENYA COLONY

The Kenya Defence Force, which maintains armed forces purely for local defence, by an order issued early this year, now includes an organization for an air unit, which is to consist of a squadron and four flights, and a headquarters flight.

Appointments have been made to the various commands. The details of training, provision of aeroplanes, and maintenance have, apparently, still to be worked out.

FOREIGN

FRANCE

REORGANIZATION OF THE ADMINISTRATION OF THE AIR FORCES.—(See " General Service Notes," p. 634).

AFRICAN TOUR.—Later this year, a formation of twenty-five Potez 25 T.O.E. biplanes under General Vuillemin, who commands French military aviation in Morocco, will make a tour of French Equatorial and Northern Africa. Other well-known flying officers, who will command the four flights of six aircraft each, are Lieut.-Colonel Bouscat, Lieut.-Colonel Girier, Captain Rignot, and Lieutenant Delaitre.

ENGINE DEVELOPMENTS.—In the single-seater fighter competitions, speeds between 217 and 223 m.p.h. have been realised at full throttle. Some of the aircraft are being re-equipped for the new 650 Hispano Suiza supercharged engine. A new engine is the " 1933 Pétrel," developed by the Lorraine firm. This engine has been fitted in a Nieuport aircraft. Particulars of the Pétrel, which is geared and super-charged, are as follows :—Cylinders, 12 in V. ; Bore, 5.7 ; Stroke, 5.7 ; Compression Ratio, 6.1 ; Normal Power, 600 h.p. ; r.p.m., 2,600 ; Max. Power, 815 h.p. at 11,500 ft. altitude ; Weight, 1,012 lb.

GERMANY

THE FORMATION OF THE GERMAN AIR MINISTRY.—The formation of the Nazi Cabinet in January of this year has led to a complete change in the higher administration of German civil aviation, which had previously been controlled by a department of the Ministry of Transport. The first indication of the impending reorganization was the announcement, which seems to have been quite unexpected even in aeronautical circles, that Captain Göring had been appointed Commissary for Aviation. The next development was the announcement that the Air Department of the Ministry of Transport would be taken over by the Commissariat for Aviation and housed in a separate building.

From speeches made at this period by the Commissary for Aviation, it would seem that aviation in general is to be even more intensively developed in Germany under the new régime than hitherto. One of the first steps taken at the instigation of the new administration has been the recent amalgamation of the principal societies and clubs engaged in the promotion of sporting or amateur aviation under a single organization bearing the title of " Deutscher Luftsport Verband " (German Air Sport Society), and the adoption by this Society of a special uniform for its members.

At the end of April a presidential decree announced that the Commissariat for Aviation had been transformed into the Ministry of Aviation with Captain Göring as Air Minister.

THE DORNIER DO.X.1.—It is reported in the German press that, at the instance of the new Air Ministry, the Dornier Do.X.1 is to be taken over by the Deutsche

Luft Hansa, and will undertake a tour of Europe in the summer. Opportunity will be given for the public to inspect the boat and to participate in local flights. It is also stated that the Do.X.1 was seriously damaged when alighting on the lake near Schalding in East Bavaria on 9th May, 1933.

THE DORNIER DO.Y. BOMBER.—The firm of Dornier have produced in their Swiss branch a three-engined bomber landplane, the Do.Y. The aeroplane carries a crew of four and a bomb load of 2,640 lb. Three 500 Jupiter engines are at present fitted, but arrangements are made for alternatively fitting two Mistral-Major with one Jupiter engine, or two Mistral-Major engines. A maximum speed of 151 m.p.h. is reached at sea level with the three Jupiter engines. The total weight is 18,720 lb.

HEAVY OIL ENGINES.—The aeronautical press announces that, as the tests of the Junkers " Jumo IV " heavy oil engine have given satisfaction, this engine is to be used extensively by the Deutsche Luft Hansa. Among others, the Junkers G.38 is to be fitted with " Jumo IV " engines.

ITALY

FLIGHT TO CHICAGO AND BACK.—On 1st July a formation flight of twenty-five Savoia Marchetti S.55.X. flying boats, under the personal leadership of General Balbo, the Italian Minister for Air, left Orbetello Air Station, near Rome, for their flight across the North Atlantic to Chicago. The formation was divided into four squadrons, each containing two flights of three boats, the twenty-fifth being in reserve. Each aircraft carried a crew of four, consisting of a senior pilot, an officer pilot, a non-commissioned radio operator, and a soldier mechanic.

The first stage was to Amsterdam, a distance of 875 miles, the route taken being over Genoa, the Splügen Pass, Zurich, the Rhine Valley and Basle, Strasbourg and Cologne. The Alps were crossed at a height of 12,000 ft. On arrival over Amsterdam the Italian force was greeted by a formation of sixty Dutch military aeroplanes. An accident to one of the boats on landing resulted in the death of a sergeant and injury to the three other members of the crew; the boat was put out of action.

The twenty-four flying boats left on 2nd July for Londonderry, which was reached in five hours. General Balbo was received there by Air Marshal R. H. Clark-Hall, representing the Royal Air Force, and by the naval, military and air attachés of the Italian Embassy in London. On 3rd July Lord Londonderry flew from Hendon to Londonderry to greet General Balbo.

The squadron left Lough Foyle on the third stage of their flight on 5th July and landed at Reykjavik, Iceland. The 940 miles of this stage were completed in five hours fifty-five minutes, the average speed being 156 m.p.h. For the last 120 miles the boats flew blind through fog, and on nearing Iceland met a south-westerly gale with rough sea, rain and low cloud. For the next six days the weather reports of conditions over the Atlantic were so bad that General Balbo would not continue the flight. On 11th July a false start was made, the leading machine being unable to leave the water owing to a choked petrol filter, and the departure was postponed for twenty-four hours.

On 12th July the formation set out on the longest stage of their flight, a distance of 1,500 miles, to Cartwright, Labrador; this was accomplished in about fourteen hours. Although the weather conditions had been reported as favourable, the passage proved very difficult. During the first two hours the sky was over-

cast and there were low clouds, and the boats were forced to fly almost blind. From the third to the fifth hour they passed through such thick fog that they could scarcely see the ends of their wings. In order to avoid the danger of accumulated ice they flew at only 300 feet. Later they found open sky at 2,500 feet. Strong head winds hampered progress, and the average speed was only 124 m.p.h.

The twenty-four flying boats took off from Cartwright for Shediac Bay, New Brunswick, a distance of 800 miles, on 13th July. Flying via Cape St. George on the West coast of New Brunswick then across the Gulf of St. Lawrence, they arrived at Shediac in about seven hours. The following day they left Shediac for Montreal. The last stage to Chicago was completed on 15th July. As the twenty-four boats crossed the Canadian frontier, forty-two fighters of the United States Army Air Corps joined them as escort.

The formation started their homeward journey from Chicago on 26th July.

PRE-MILITARY FLYING TRAINING.—The Italian Government has recently instituted a system of pre-military flying training courses, especially designed for such members of the " Young Fascist Association " as wish, when called up under the annual levy, to enter the Italian Air Force. These courses will continue simultaneously at twenty-six cities throughout Italy, and are to be so arranged as not to interfere with ordinary civil occupation. At the end of the courses, pilots' certificates will be awarded to successful members who will, when called up for military service, become sub-lieutenants or sergeant-pilots according to their educational capacity.

JAPAN

OFFICIAL PRONOUNCEMENTS ON AIR DEFENCE.

According to the Japanese press, for some time past there has been a feeling of alarm throughout the country in regard to the likelihood of the great cities and manufacturing centres of the country being exposed to bombing from the air. This feeling is stated to have been brought about, more or less, from two sources; firstly, the recent publication of a magazine article by an Admiral of the American Navy, in which it was declared that it would be feasible for the United States Naval Air Service to advance on Japan by way of the Aleutian Islands. This article was freely translated and published in Japanese journals. Secondly, the close proximity of the Soviet military air bases at Vladivostok and Habarovsk. In the minds of Japanese officials, however, these fears appear to have little weight, and the Minister for War and the Minister of the Navy have made statements in order to allay any feeling of apprehension.

Both Ministers declare that Japan is now building aircraft equal in every respect, if not superior, to those constructed by foreign Powers. They state that the Army and Navy with their present air services are fully prepared to repel any attack from the air. The Minister of War, while admitting that the knowledge of aviation in Japan generally leaves a great deal to be desired, stated, nevertheless, that as many men in the Japanese Army as possible are being given training in aviation. He also pointed to the fact that the Japanese Army, following upon the example set by the Navy, have started a system of training boy airmen, with a view to their becoming pilots and mechanics in the Army Air Service, on attaining the necessary age.

In recent months, the War Minister asserted, the Japanese people have co-operated so thoroughly with the military authorities in staging anti-aircraft manœuvres, that he was certain any attack would find them quite able to defend themselves. He further stated that, as Japan did not take any active part in the World War, she was not able to develop various types of fighting equipment as did the other Powers. Accordingly, she had been especially backward in respect of her air development. However, interest in aviation was at fever pitch at the present time, and the public at large were more than ever aware of the importance of aviation. But he did not think that the knowledge and interest of the public in matters connected with aviation had reached a point which would warrant complete satisfaction. He promised, however, to ensure that every effort would continue to be exerted, and he hoped that the stage of development attained would, in time, be comparable to that in Russia.

The Minister of the Navy stated that the Navy was doing its utmost with regard to aviation development, and while he would not care to commit himself as to whether Japan might rest assured in the knowledge that she would not be attacked from the air, he felt that the people could feel satisfied that the Navy was doing its best to develop its air arm. With regard to the question of whether the establishment of an Air Ministry was desirable or not, the Minister of the Navy gave his opinion that such a thing was not only unnecessary, but would be more of an encumbrance than an advantage.

AIR FORCES IN MANCHUKUO.—According to a report in the *Aeroplane*, the number of aircraft being maintained permanently in Manchukuo is said to be 30 per cent. in excess of the number stationed there prior to the outbreak of the recent troubles. There is also to be an increase in the Army Air Corps Reserve. Forthe time being the officers and men in service in Manchukuo will continue to be selected from the personnel of the various Air Regiments in Japan, but it is proposed in future to train a number of reserve pilots ranging from 15 to 18 years of age.

UNITED STATES

ARMY AIR CORPS.—With the formation of the five remaining Pursuit Squadrons, the Army Air Corps extension programme adopted seven years ago has reached its final stage. The Army air strength will in due course be distributed in Hawaii, Panama and the Philippine Islands as follows :—

Hawaii : One Bombardment and one Pursuit group, each comprising four squadrons, together with two Observation and one Attack squadrons.

Panama : One composite group of one Bombardment and two Observation squadrons, and one Pursuit group of four squadrons.

Philippine Islands : One squadron each of Bombardment, Pursuit and Observation.

NEW ARMY AIRCRAFT.—The latest type of pursuit aeroplane to be delivered to the Material Division of the Army Air Corps is the Curtiss XP–934. It is the first Army pursuit aeroplane to be equipped with automatic slots and flaps. The engine fitted is the 650 h.p. Conqueror.

PILOTS' FLYING HOURS.—The Army Air Corps, up to and including the current financial year, has been voted flying pay by Congress on the basis of 165 flying hours per pilot per annum. The budget for the new financial year commencing on 1st July has provided flying pay on the basis of an average of 200 flying hours

per pilot during the year. This increased award may be short-lived, however, since it is feared that economy measures to be introduced into Congress may result in reducing the average to 50 hours per pilot until such times as the financial situation shall improve.

The Navy Department has recently issued an order reducing, for reasons of economy, the minimum flying time required per annum to qualify for flying pay in the Naval Air Service. The original minimum was 120 hours per annum, but 100 hours is the time now required.

FORMATION OF TRANSPORT SQUADRONS.—In accordance with the instructions issued by the Chief of the Army Air Corps Material Division, the 2nd Provisional Air Transport Squadron has been constituted at the San Antonio Air Depot, Duncan Field, Texas. This is one of the squadrons to be constituted at each of the air depots in the U.S.A. as a part of the 1st Provisional Air Transport Group, which is provisionally and experimentally organized under new Air Corps policy. Under this policy, the basic function of such a group will be to supply tactical organizations in the field, and in addition the group will be charged with the function of transporting supplies from the depots to stations in their control areas.

AIRSHIP NOTES

GERMANY

" GRAF ZEPPELIN."—The " Graf Zeppelin " continues to ply a regular service across the South Atlantic. Starting on 6th May she was scheduled to make nine return flights to South America during the summer and early autumn of 1933.

JAPAN

NAVAL AIRSHIPS ABANDONED.—The Ministry of Marine has withdrawn from service the single remaining airship in commission and has decided to abandon the use of airships for naval work.

UNITED STATES

THE " MACON."—The naval airship " Macon " has passed her preliminary trials and is ready for inspection and survey previous to commissioning. When accepted, she will proceed to the Lakehurst Naval Air Station for post-trial examination. It is anticipated that about October next the airship will proceed to its Pacific base at Sunnyvale, California, for operation with the battle fleet. The Sunnyvale base has a full-size shed and is also equipped with the latest improvements, including a telescopic mooring mast and a special stern beam to hold and support the stern of the airship when moored to the mast. There is a helium re-purification plant with a 2,000,000 cubic feet low-pressure storage holder for the impure gas, and high-pressure drums of the same capacity for pure helium.

Under present arrangements, Lakehurst Airship Station will be reduced to a care and maintenance condition as soon as the " Macon " leaves it.

CAUSE OF THE " AKRON " DISASTER.—The New York correspondent of *The Times* reports that the Navy Board does not agree with the findings of the Board of Enquiry instituted to examine the causes of the " Akron " disaster.

The enquiry attributed the destruction of the " Akron " to " a downward current of wind of such magnitude that the lower fin struck the water before the descent could be checked." The evidence, it was stated, was insufficient to determine whether the disaster could have been prevented had the airship been at a greater height. It is considered, however, that " the Commanding Officer committed an error of judgment in not setting such a course as would have kept him in the same semi-circle, thereby probably avoiding the severe conditions finally encountered, and that this error of judgment was a contributory cause of the loss of the ' Akron.' " It was nevertheless pointed out that there was little direct knowledge of the conditions upon which the Commander's actions were based and that " everything within the knowledge of the Commander might have pointed to his plan of action being justifiable."

Admiral Pratt, Chief of Naval Operations, contends that the report is inconsistent, and that " no reflection should attach to the Commander of the ' Akron.' " The Secretary of the Navy concurs with this view.

A somewhat Gilbertian enquiry was held subsequently by a Congressional Committee consisting of five Senators and five Representatives, presided over by Senator King, of Utah, who is violently opposed to airships. This Committee, besides calling such air experts as General William Mitchel and Colonel Charles Lindbergh, also appeared to value the testimony of a miscellaneous collection of newspaper editors. It is surprising, therefore, that they should have come to such definite and practical conclusions as those which they promulgated. Their recommendations, which presumably will carry as much weight, if not more, than those of the professional authorities, are that a new airship should be built to replace the " Akron " ; that the " Los Angeles " should be put back into commission as a training ship ; that the Lakehurst Naval Air Station should be a centre for training and experiment in airships under the command of an experienced airship commander, who should have placed at his disposal experts in airship operation, aerology, radio and other fields of instruction and research ; and that non-rigid airships and free balloons should be provided for training.

The Committee disputes the finding of the naval enquiry that the " Akron " was fully and properly equipped at the time of the disaster by saying that " if the Navy Department Orders require lifebelts to be on board and they were not on board, the airship could not have been properly equipped."

REVIEWS OF BOOKS

NAVAL

The Introduction of the Ironclad Warship. By J. P. Baxter. (Harvard University Press). $5.00.

In his preface the author claims that " the introduction of the ironclad warship has never hitherto been made the subject of a monograph based on the archives of the British Admiralty or of the Navy Department at Washington." He mentions three French writers who have utilised the French manuscript records for their publications. The reason he gives for this is, that only since the Great War have historians had access to the British and French archives for the period in question. As is well known much contemporary information exists in other sources.

In an admirably documented volume Mr. Baxter has successfully compiled a record that forms a careful study of the influences, proposals, controversies and experiments culminating in the complete revolution of warship design and construction. He commences with an outline of the primitive ideas advanced to solve the problem of rendering ships invulnerable. Next he indicates the sequence of events that gradually produced a situation necessitating radical change. The principal factors in the situation were ; the steam engine, the shell gun, the screw propeller, rifled ordnance and armour. Inevitably the adoption and improvement of each factor in turn led to the construction of a new type of warship which embodied all of them.

In tracing the progressive stages of this revolution as evidenced in the official records, many events and personalities are recognised as landmarks in the story. Sinope, in 1853, was the vindication of Paixhans shell gun. The Crimean War witnessed the passing of the wooden warship and hastened the adoption of the screw propeller, which is associated with the names of Smith and Ericsson. Another war lesson was the necessity of protection for the ship and her complement. The practical solution of this was proved by the French floating batteries at Kinburn. France also has the credit, thanks to Labrousse, Dislère, Dupuy de Lôme and Napoleon III, of building the first sea-going armoured ship.

British policy in the initial stages was marked by its extreme caution. To the nation that owns the most powerful fleet a change of type is unwelcome. The period between 1856—1861 is marked by hesitating experiments ahd a stubborn non-commital attitude on the part of the Admiralty. Among the quotations by the author it is interesting to remark the insistence of the Prince Consort as contrasted with the economic vacillations of the politicians. The times were critical, but when tension passed, the Admiralty emerged with the credit of initiating a policy of building iron-hulled armoured ships and adopting rifled ordnance.

In contrast, the author emphasizes the backwardness of the United States. The outbreak of the Civil War found the Navy Department utterly unprepared in every direction. Though lacking resources, the Confederates were first in the field with an armoured ship, the " Virginia," better known under her original name of " Merrimac." Fortunately for the Federal cause, the inventive genius of Ericsson created the " Monitor " in time.

Mr. Baxter details at length the measures and projects that surround the construction of these two famous antagonists, and retells the story of their dramatic encounter. At this distance of time it is difficult to recapture much impression of the sensation their duel caused. It was a practical demonstration of the futility of the wooden ship, the power of the ram, and the efficacy of armour. Further, it afforded an inconclusive comparison between two systems of armament—broadside and turret. Within the space of a few hours of battle, the seal was set triumphantly on the revolution of warship design. Naval thought took a new orientation which it still pursues in the struggle for supremacy between guns and armour.

At this point in his investigations the author practically brings his work to its conclusion. He contends himself with a final chapter in which he traces briefly the influence of the action in Hampton Roads on the immediate future progress of naval construction.

The subject is competently treated throughout. Deductions, comments and conclusions are well stated with praiseworthy impartiality. The rival claims of inventors and theorists are set out dispassionately. The whole book bears evidence of thorough examination and careful investigation. It is annotated with copious footnotes, and several original documents are reproduced in the Appendices. An extensive bibliography is included. As a reference work of great value it should rank as a classic history of a far reaching change in naval architecture.

MILITARY

Grant and Lee: A Study in Personality and Generalship. By Major-General J. F. C. Fuller, C.B. (Eyre & Spottiswoode). 10s. 6d.

In an earlier work, "The Generalship of Ulysses S. Grant," (1929), General Fuller instituted a comparison between Grant and Lee decidedly unfavourable to the latter. He now aims a more deadly blow at Lee's military reputation, pronouncing him to be "in several respects one of the most incapable Generals-in-Chief in history." Lee was only General-in-Chief for the last two months of the war, when the Confederate cause was already lost beyond hope of recovery. He acted as the President's Chief of Staff, for about two months in 1861 and for about a slightly longer period a year later. But General Fuller argues that "throughout the war he was in fact Davis's unofficial Chief of Staff," and quotes his youngest son to the effect that "he advised the President and Secretary of War as to the movements and dispositions of the other armies in the Confederacy." But what the youngest Robert Lee wrote was not "advised," but "advised *with*"—a considerable difference. Lee's replies, when his counsel was sought, were not those of a responsible adviser, but rather tentative suggestions, disclaiming any special knowledge of the actual situation and leaving the whole responsibility to Davis himself. His answer on such a critical point as the substitution of Hood for Johnston in the command of the army at Atlanta is typical of his general attitude. All his attention was concentrated on his own army and the enemy army confronting it. He must be judged on his record as the commander of an army in the field.

It may be admitted at once that Lee lacked the necessary qualities for a successful revolutionary general, because nothing would have induced him to become a military dictator, and it was a military dictator that the South needed to make its revolution successful. His weakness as an army commander were the defects of his great virtues and were the cause of his failure to maintain discipline in his

army, to impose his will upon his subordinate generals and to press his demands for supplies and reinforcements upon the Government with the necessary force. Nevertheless, "what this bootless, ragged, half-starved army" of Northern Virginia under Lee's command "accomplished, is one of the miracles of history" (p.117). General Fuller qualifies this high praise by holding Lee responsible for the hardships which his soldiers endured, and maintains that it was his neglect of their physical needs which made it impossible to exploit the victories won. Lee was "the worst Quartermaster-General in history." But does the responsibility really lie on Lee's shoulders?

General Fuller's chief complaint against Lee is that he was not a "grand strategist," that he never envisaged the war as a whole but thought only of his native State, and that his two invasions of the North were disastrous violations of the Fabian policy deliberately adopted by his Government. Even in his minor role of "field strategian" he finds much to blame. But his criticism of Lee's operations would have carried more weight, if he had studied their details with the same care as he has Grant's. His summary of the Second Manassas campaign is singularly unsatisfactory.

It is refreshing to find that in the end General Fuller decides that, in Lee's place, Grant would not have done much better than Lee, though in Grant's place Lee would not probably have done half as well as Grant, not being a "grand strategist."

Parliament and the Army, 1642-1904. By Lieut.-Colonel J. S. Omond, M.B.E., M.C. (Cambridge University Press). 10s. 6d.

The development of the British Army from the days of Charles I down to the creation of the Army Council, in 1904, is not only an interesting historical study, but it also offers the explanation of much that concerns the British officer of to-day. For these two reasons this little book is welcome. It is, of course, a compilation and highly condensed, and thus forms a serviceable introduction to further reading. The earlier chapters deal at some length with the struggles between the King and Parliament as to the maintenance of a standing army, and Colonel Omond fully explains the origins and the importance of the Mutiny Act of 1689. The history of the armed forces during the XVIIIth century is summarily reviewed, and then the author comes to what is the best part of his work, namely the tenure of office as Commander-in-Chief of the Duke of Cambridge and the initiation of the Cardwell reforms. Colonel Omond shows how Queen Victoria and the Duke came gradually to accept the growing authority of Parliament over the forces of the Crown. So the climax came only after the South African War, when the Army Council was instituted. This, indeed, may be regarded as the final step in the gaining of complete control by Parliament of the Army. The "Epilogue" describes the work of Haldane in the later reorganization of the Army after 1906. But these sweeping changes were mainly military, and to some extent political, in their significance; their constitutional importance was not really great.

This is a good book which may well be consulted by all students of military history.

The Tactics and Strategy of the Great Duke of Marlborough. By Hilaire Belloc. (Arrowsmith). 10s. 6d.

Mr. Belloc is a historian of ability gifted with a keen military insight. He has now written a short text-book concerning Marlborough's campaigns, which in many an author's hands might have degenerated into being a glorified "cram-book."

But the fullness and clarity, with which the great battles are recounted save it from such a fate, while the few historical explanations and allusions are all thoroughly illuminating. The volume, indeed, cannot be regarded as a complete history of Marlborough himself or of his campaigns. Nevertheless it is a thoroughly pleasing production, and one that should prove of considerable utility to the student for purposes of examination.

Except in dealing with Ramillies there is no really new matter in the book, which depends for its value solely on its concentration upon military essentials. After a convincing chapter on Marlborough's military ability—Mr. Belloc wisely refrains from touching in any way on his political career—there are six chapters, each dealing with the principal military achievements of the Duke. These are Blenheim, Wanghe and the Lines of Brabant, Ramillies, Oudenarde, Malplaquet, Aubigny and the Lines of 1711. Mr. Belloc shows that Blenheim, although perhaps the most spectacular of Marlborough's victories, was not so remarkable for the rapidity of the Allied marches, nor for the skill with which the victory was won, as other battles fought by Marlborough. Mr. Belloc, on the other hand, is justly lavish with praise of Marlborough's marches to Oudenarde and again, later, against Villars' great lines of 1711. In dealing with Malplaquet the author's natural sympathies with the French, for once in a way, may be accused of impairing his wonted impartiality.

Throughout, the importance of the personal qualities in leadership are emphasized. The result is a valuable contribution to the much argued question of " generalship," together with its corollary, the best age at which a man can command in war. But why should the book be styled " Tactics and Strategy " when the author makes it abundantly clear that strategy should come first ?

Greek Mercenary Soldiers : From the Earliest Times to the Battle of Ipsus. By H. W. Parke, M.A. (Clarendon Press). 12s. 6d.

" The history of Greek mercenaries is chiefly the story of the transition of Hellenic warfare from its primitive and unskilled beginnings to its developed and organized conclusion. The typical Greek soldier of the fifth and earlier centuries was only an amateur in war. The mercenary was a professional ; and ultimately the professional ousted the amateur from all important warfare." This is the gist of this erudite and interesting work. Clearly intended for Greek historians and scholars, it is sufficiently explicit in military detail to attract the military student who wishes to study changes that have occurred in armies and in warfare since early historical times. There is a curious connexion, so it seems, between forms of internal government and of the armed forces maintained by a state, which still apply to-day. The despot and the foreign conqueror have both felt the need of paid troops on whom they could rely both to assert their authority within and to extend their realms without. So the Greek mercenary, the " heavy infantry " of the period, was freely employed by the various rulers of the old Persian monarchy, just as he was used by Alexander himself to carry out his Eastern conquests.

The first and best-known mercenary army, raised and employed on a large scale, was Xenophon's expeditionary force of 10,000 with which he fought for Cyrus at Cunaxa. Full details of this expedition are given by Mr. Parke. Similarly he treats of the armies which Alexander created for his conquest of the East ; it appears that, during the five years 334-329 B.C., he raised some 50,000 Greek mercenaries. It is strange to find that both before and still more after his death, Greeks were being employed to fight against the Macedonian conqueror and his successors.

King Agis of Sparta and his Campaign in Arkadia (418 B.C.). By W. J. Woodehouse. (Oxford University Press). 10s. 6d.

This Battle of Mantineia, fought in 418 B.C. by the Spartans against the Confederates headed by the Argeians and Athenians, must not be confounded with the celebrated victory of Epaminondas over the Athenians and Spartans at the same place in 362 B.C. The former battle is little known because it is narrated by Thucydides alone (Book V, 61–75) in fifteen chapters that contain many ambiguities. Mr. Woodehouse has reconstructed the story with much cleverness and given what is a realistic picture of warfare at that epoch. Students of war will find much that is of interest in the author's story—though it is, of course, largely hypothetical. Agis was clearly a skilful leader who exploited the curious topography of the theatre of operations to the utmost, while turning to good account the discipline of his Spartan hoplites to the full. It is interesting to read how the careful training of these troops enabled them to manœuvre so very quickly, when almost in contact with the enemy; and it is curious how the tendency of the ancient Greek infantry to edge away to the right—owing to the carriage of a heavy shield on the left arm—caused a gap to arise in the Spartan front, much as it did with the Germans on the Marne. As a portrayal of a battle of those times the book may be recommended.

Le Drame de L'Yser (La Surprise des gaz, Avril, 1915). By Général Mordacq. (Edition des Portiques, Paris). 12 fcs.

General (then Colonel Mordacq) was commanding the French 90th Brigade in the Langemarck sector in April, 1915. He therefore went through the celebrated German gas attack of 22nd April. The present work contains a detailed description of the fighting that accompanied the German surprise. It is compiled with full reference to British records and does ample justice to the Canadian units which, with the French, felt the full severity of the gas attack. The author takes as his motive for publishing this account the fact that the French historians say too little of this battle, whilst he is anxious to prove that this employment of the gas is but another proof of the everlasting bad faith of the German, which has been known to the world ever since the days of the Roman historian, Tacitus.

The gas attack should have been foreseen, so he states, and there is ample justification for this opinion, since a German deserter had betrayed the secret on 14th April; but the higher powers were sceptical because the man gave away so much detail. The panic that followed the attack is perhaps glossed over, and there are too many extracts from honorific documents and too many descriptions of great individual exploits. But the account, on the whole, is instructive. In particular General Mordacq does justice to the share that the British took in the subsequent fighting that is usually known as the Battle of St. Julien. He also draws attention to the services rendered by the Belgian troops. As the German attack undoubtedly had, as its ultimate object, the pinching off of the Ypres salient, it is clear that the consequences of this first gas attack would involve, and very heavily too, the British Army on that front more than the French. It did so, but it is fortunate that the Germans had not the necessary resources to follow up their initial surprise of the French; this was complete as the book shows.

Die Deutsche Miliz der Zukunft. Anon. (Mittler & Son, Berlin). Rm. 2.

Under this title an anonymous writer writes of the "Militia" that Germany should, and—so he asserts—will possess in the near future. Indeed it seems agreed among German military writers that their country will shortly be re-arming

It is, consequently, of no little interest to find a firm of such standing as Mittler and Son producing a work which is a frank statement of the organization of the German army that is to be. The title "Militia" may perhaps serve to delude many as to the real quality of the instrument that is to be created, but this term, as we know, is so vague that it may mean little or nothing. Anyhow a militia on the Swiss model is utterly unpalatable to the author, who visualizes a six months' course of intensive training, a cadre-personnel of more or less permanent character, the reconstitution of a cadet training school and of the former General Staff: a formidable programme to create a formidable instrument. It may be assumed that at least ten years would be needed to produce the army of 1,500,000, 2,000,000 men, complete with all armament and paraphernalia, which is here visualized. But enthusiasts in Germany claim that an effective fighting force could be created in five years. The only problem that arises is one of finance. The acquiescence of the rest of Europe seems to be taken for granted.

The book has been written by an expert hand, and although guarded in its language, contains a detailed and practicable scheme.

Memoirs of the Life and Gallant Exploits of the Old Highlander Sergeant Donald Macleod (1688-1791). By J. G. Fyfe. (Blackie & Son). 5s.

This volume is reprinted from the original edition of 1791, and contains an introduction and notes by the present editor.

Old Sergeant Macleod lived to be 103 years of age. "He fought with the Royal Scots under Marlborough, with Argyll at Sheriffmuir, with the Black Watch, under Cumberland, at Fontenoy, with Frazer's Highlanders, under Wolfe, in Canada, and at the age of eighty-seven joined Sir Henry Clinton's army in New York." This is how Mr. Fyfe introduces this remarkable old soldier. "He chased Highland robbers, fought duels, loved, married, and begot children, and when 103 years old, was settled in London telling stories of the brave days, and grumbling at the meanness of the Government." Such is the gist of the tale.

The book is worth reading—and it is very brief—by all those who desire to gain an insight into the Army of the XVIIIth Century. If the old man's story does not throw very much light on the strictly military side of the soldier's life of the period, it is replete with anecdotes concerning life in the Highlands at that period. Old Macleod's readiness to fight duels with all comers was remarkable; indeed this aspect of his tale is perhaps the most noteworthy sidelight on Army life of the day; he was an expert and shrewd swordsman. His amorous adventures were as numerous as his duels.

REGIMENTAL HISTORY

Regimental History of the 45th Rattray's Sikhs. Volume I, 1856-1914. By Colonel H. St. G. M. McRae, D.S.O., O.B.E. (Maclehose & Co.). For private circulation only.

In 1855 it was decided to raise a corps of military police to keep order in the country of the Sopthal Pergunnahs of Lower Bengal. Captain Thomas Rattray was deputed to raise and command this corps, which later became the 45th Sikhs. It was recruited at Lahore. At the close of the Mutiny, in which the regiment fought with distinction, under the title of 1st Bengal Military Police Battalion it was engaged in Sikkim; then, changing its name to 45th Sikhs, it participated in the second Afghan War in 1878-79, and in nearly all the minor frontier wars down to 1914. The text is pleasantly written; there are several skeleton maps and diagrams but no index.

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THE SANDWICH PAPERS, 1771–1782. Vol. II. Edited by G. R. Barnes and J. H. Owen. 8vo. (Navy Records Society).

MILITARY

INSTRUCTION PROVISOIRE DU 6 OCTOBRE, 1921, SUR L'EMPLOI TACTIQUE DES GRONDES UNITES WITH ANNEXE NO. 1. Issued by the "Ministère de la Guerre." 2s. 2d. (Charles Lavanzelle & Cie, Paris).

LE DRAME DE L'YSER. By General Mordacq. Frs. 12. 8vo. (Editions des Portiques, Paris). Presented by the Author.

ROYAL MILITARY CHAPEL, WELLINGTON BARRACKS. 8vo. (Hatchards) 1882. Presented by Thurkill Cooke, Esq.

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